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ABSTRACT

This analysis covers tasks performed by a truck and transport mechanic, an occupational title some provinces and territories of Canada have also identified as commercial transport vehicle mechanic; transport truck mechanic; truck and coach technician; and truck and transport service technician. A guide to analysis discusses development, structure, and validation method; scope of the occupation; trends; and safety. To facilitate understanding the nature of the occupation, work performed is divided into the following categories: (1) block, the largest divisions in the analysis that reflect a distinct operation relevant to the occupation; (2) tasks, the distinct activities that in combination make up the logical and necessary steps the worker is required to perform to complete a specific assignment in a block; and (3) sub-tasks, the smallest divisions into which it is practical to subdivide any work activity and that in combination fully describe all duties constituting a task. Other components of a task are trends, related components, tools and equipment, and supporting knowledge and abilities. Each sub-task is accompanied by results of a validation by all provinces/territories. The 8 blocks, which include 35 tasks, are occupational skills; chasis and frames; air systems, brakes, and steering; electrical and electronic systems; cab and body; engine and supporting systems; drive train; and accessories. Appendixes include a list of tools and equipment; glossary; blocks and tasks weighting; and task profile chart. (YLB)

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ED 478 605

# Occupational Analyses Series

# Truck and Transport Mechanic

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**2000**

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*The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this occupational analysis as the national standard for the occupation of truck and transport mechanic.*

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## OTHER RELATED OCCUPATIONAL TITLES

This analysis covers tasks performed by a truck and transport mechanic whose occupational title has been identified by some provinces and territories of Canada under the following names:

- Commercial Transport Vehicle Mechanic
- Transport Truck Mechanic
- Truck and Coach Technician
- Truck and Transport Service Technician

## LIST OF PUBLISHED OCCUPATIONAL ANALYSES*

| TITLE | NOC** Code |
|---|---|
| **Appliance Service Technician (1997)** | 7332 |
| Aquaculture Technician (1977) | 2221 |
| Arts Administrator (1989) | 0114 |
| **Automotive Painter (1995)** | 7322 |
| **Automotive Service Technician (1998)** | 7321 |
| Automotive Technician - Automatic Transmission (1990) | 7321 |
| Automotive Technician - Electrical/Electronics (1992) | 7321 |
| Automotive Technician - Engine Repair and Fuel Systems (1989) | 7321 |
| Automotive Technician - Front-End (1989) | 7321 |
| Automotive Technician - Manual Transmission, Driveline and Brakes (1990) | 7321 |
| Aviation Machinist (1994) | 7231 |
| **Baker (1997)** | 6252 |
| Blaster (Surface) (1987) | 7372 |
| **Boilermaker (1994)** | 7262 |
| **Bricklayer (2000)** | 7281 |
| **Cabinetmaker (2000)** | 7272 |
| **Carpenter (1998)** | 7271 |
| **Cement Finisher (1995)** | 7282 |
| **Construction Electrician (1994)** | 7241 |
| **Cook (1997)** | 6242 |
| **Electrical Rewind Mechanic (1999)** | 7333 |
| **Electronics Technician - Consumer Products (1997)** | 2242 |
| Electronics Technician Vol. I (1986)<br>(Video Equipment) | 2242 |
| Electronics Technician Vol. II (1986)<br>(Audio Equipment) | 2242 |

* **Red Seal analyses are indicated in bold**

** **National Occupational Classification**

| | |
|---|---|
| Electronics Technician Vol. III (1986)<br>(Computer Equipment) | 2242 |
| Electronics Technician Vol. IV (1986)<br>(Office Equipment) | 2242 |
| Electronics Technician Vol. VI (1986)<br>(Communication Equipment) | 2242 |
| Electronics Technician Vol. VII (1986)<br>(Signaling Equipment) | 2242 |
| Electronics Technician Vol. VIII (1986)<br>(Navigation Equipment) | 2242 |
| Electronics Technician Vol. IX (1986)<br>(Video Game Equipment) | 2242 |
| Electronics Technician Vol. X (1987)<br>(CADD Equipment) | 2242 |
| Electronics Technician Vol. XI (1987)<br>(CAM Equipment) | 2242 |
| Electronics Technician Vol. XII (1987)<br>(Robotics Equipment) | 2242 |
| Electronics Technician Vol. XIII (1987)<br>(Biomedical and Laboratory Equipment) | 2242 |
| Electronics Technician Vol. XIV (1987)<br>(Industrial Process-Control Equipment) | 2243 |
| **Farm Equipment Mechanic (2000)** | 7312 |
| **Floorcovering Installer (1997)** | 7295 |
| **Glazier (1994)** | 7292 |
| **Hairstylist (1997)** | 6271 |
| Heating (Gas and Oil) Servicer - Commercial and Industrial (1978) | 7331 |
| **Heavy Duty Equipment Mechanic (1998)** | 7312 |
| Heavy Equipment Operator (1983) | 7421 |
| **Industrial Electrician (1997)** | 7242 |
| **Industrial Instrument Mechanic (2000)** | 2243 |
| **Industrial Mechanic (Millwright) (1999)** | 7311 |
| **Insulator (Heat and Frost) (2000)** | 7293 |
| **Ironworker (Generalist) (1993)** | 7264 |
| **Lather (Interior Systems Mechanic) (1994)** | 7284 |
| Logistics (1992) | 0713 |

| | |
|---|---|
| **Machinist (1998)** | 7231 |
| Major Electrical Appliance Repairer (1984) | 7332 |
| **Mobile Crane Operator (1997)** | 7371 |
| **Motorcycle Mechanic (1995)** | 7334 |
| **Motor Vehicle Body Repairer (Metal and Paint) (1997)** | 7322 |
| New Home Builder and Residential Renovation Contractor (1992) | 0712 |
| **Oil Burner Mechanic (1997)** | 7331 |
| **Painter and Decorator (2000)** | 7294 |
| **Partsperson (1995)** | 1472 |
| **Plumber (1996)** | 7251 |
| Power Engineer (1997) | 7351 |
| **Powerline Technician (1996)** | 7244 |
| **Recreation Vehicle Mechanic (2000)** | 7383 |
| **Refrigeration and Air Conditioning Mechanic (1997)** | 7313 |
| **Roofer (1997)** | 7291 |
| **Sheet Metal Worker (1997)** | 7261 |
| **Sprinkler System Installer (1995)** | 7252 |
| **Steamfitter-Pipefitter (1996)** | 7252 |
| **Steel Fabricator (Fitter) (1994)** | 7263 |
| **Tool and Die Maker (1997)** | 7232 |
| **Truck-Trailer Repairer (1994)** | 7321 |
| **Truck and Transport Mechanic (2000)** | 7321 |
| **Welder (1996)** | 7265 |

**REQUESTS FOR THESE PUBLICATIONS SHOULD BE FORWARDED TO:**

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# FOREWORD

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to co-operate with provincial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources Development Canada sponsors a program, under the guidance of the Canadian Council of Directors of Apprenticeship (CCDA), to develop a series of occupational analyses.

The Occupational Analysis Program has the following objectives:

- to identify and group the tasks performed by skilled workers in particular occupations;

- to identify those tasks that are performed by skilled workers in every province and territory;

- to develop instruments for use in the preparation of interprovincial standards "Red Seal" examinations and curricula for training leading to the certification of skilled workers;

- to facilitate the mobility, in Canada, of trainees and skilled workers;

- to supply employers and employees, and their associations, industries, training institutions and governments with analyses of the tasks performed in particular occupations.

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# GUIDE TO ANALYSIS

## DEVELOPMENT OF ANALYSIS

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of industry experts in the field, identifies all the tasks performed in the occupation.

The draft is then assigned to occupational analysts at Human Resources Development Canada for translation and then returned to the consultant for review to ensure conformity with the nationally approved format.

The consultant will then forward a copy of this analysis to provincial/territorial authorities for validation by specialists in the field. Their recommendations are assessed and incorporated into the final draft which also includes the identification of the common core tasks performed in the occupation.

The occupational analysis is published in both official languages.

## STRUCTURE OF ANALYSIS

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

A. **BLOCK** - is the largest division within the analysis and reflects a distinct operation relevant to the occupation.

B. **TASK** - is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK".

C. **SUB-TASK** - is the smallest division into which it is practical to subdivide any work activity and, combined with others, fully describes all duties constituting a "TASK".

**Supporting Knowledge & Abilities**

The element of skill and knowledge that an individual must acquire to adequately perform the task is identified under this heading.

**Trends**

Any shifts or changes in technology which completion of the sub-tasks are identified under this heading.

**Related Components**

All components of a specified project being undertaken by the truck and transport mechanic are identified under this heading.

**Tools and Equipment**

All tools and equipment necessary for the truck and transport mechanic to complete a task are identified under this heading.

## VALIDATION METHOD

At the request of the Canadian Council of Directors of Apprenticeship (CCDA), the Standardization SubCommittee developed a method for the validation of the national Red Seal occupational analyses.

A draft of the analysis is sent to all provinces/territories for validation. Each jurisdiction rates the sub-tasks and applies percentage ratings to blocks and tasks. This method for the validation of the national occupational analyses identifies common core tasks across Canada for a specific occupation. This feature facilitates the weighting of the Interprovincial Red Seal examinations.

### DEFINITIONS

| | |
|---|---|
| **YES:** | the sub-task is performed by workers in the occupation in a specific jurisdiction. |
| **NO:** | the sub-task is not performed by workers in the occupation in a specific jurisdiction. |
| **BLOCK %:** | the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, which will be placed on an interprovincial examination to assess each block of the analysis. |
| **TASK %:** | the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, which will be placed on an interprovincial examination to assess each task of the analysis. |
| **NV:** | Not Validated by a province/territory. |
| **ND:** | Not Designated in a province/territory. |

### PROVINCIAL/TERRITORIAL ABREVIATIONS

| | |
|---|---|
| **NF:** | Newfoundland and Labrador |
| **NS:** | Nova Scotia |
| **PE:** | Prince Edward Island |
| **NB:** | New Brunswick |
| **QC:** | Quebec |
| **ON:** | Ontario |
| **MB:** | Manitoba |
| **SK:** | Saskatchewan |
| **AB:** | Alberta |
| **BC:** | British Columbia |
| **NT:** | Northwest Territories |

**YK:** Yukon

**COMMON CORE**

The criteria for determining common core are dependant on the performance of sub-tasks. If 70 percent of the responding jurisdictions (excluding NVs and NDs) perform the sub-task, it shall be considered common core.

Interprovincial Red Seal examinations are based on the common core identified through this validation process. This process identifies what will be assessed through the interprovincial examination.

**BLOCKS AND TASKS WEIGHTING (APPENDIX "C")**

This appendix represents the block and task percentages as submitted by each jurisdiction.

Each jurisdiction, with the use of a provincial/territorial occupational advisory committee, validates the content, places percentages on blocks and tasks, and indicates whether or not the sub-tasks are performed by the skilled workers within the occupation. The results of this exercise are submitted to the consultant who then analyzes the data and develops this appendix which provides the individual jurisdictional validation results as well as the national averages of all responses.

**PIE CHART (APPENDIX "D")**

The graph depicts the national percentages assigned to blocks in the analysis.

## SCOPE OF THE TRUCK AND TRANSPORT MECHANIC OCCUPATION

Truck and transport mechanics inspect, troubleshoot, repair, replace and maintain operating systems and components. These include chassis and frames, brakes and steering, cab and body, engine and supporting systems, drive train, and accessories. In addition, truck and transport mechanics perform preventative maintenance and diagnose performance of vehicles.

Truck and transport mechanics work on buses, motor homes, tankers, and different types of trucks (dump trucks, flat beds, pick-up trucks, etc.) that are over 4,500 GVW (Gross Vehicle Weight). In some jurisdictions, truck and transport mechanics should check with their respective Departments of Transportation to determine their eligibility to perform inspections.

The truck and transport mechanic can be found in small repair shops, large fleet maintenance companies, public transportation companies and construction companies.

## OCCUPATIONAL OBSERVATIONS

There are on-going changes in the trucking industry that the truck and transport mechanic must be aware of and be trained to work with these changes. Components and materials are better engineered to improve the aerodynamics of the truck and to reduce the amount and frequency of maintenance to the truck and components. Trucks have fewer mechanical parts, more power, and are able to carry more payloads. The components on the truck are more electronically controlled and require less servicing. The body of the truck and the components are made with lighter and stronger materials.

The truck and transport mechanic uses a variety of tools, equipment, and materials and works in difficult conditions. As a result, safety regulations have increased. To promote safety in the occupation and the industry, trucks are built with more user-friendly equipment and self-monitoring systems.

Because of an increase in environmental regulations, trucks have cleaner burning engines and lower emission levels. Also, more stringent regulations for the disposal of materials are in effect. The components on the trucks are becoming more environmentally friendly.

The design of trucks is continually changing to provide more comfort and a smoother ride for the operator, and a better "feel" for the road during operation.

## SAFETY

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances which may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to cause an accident or injury.

It is generally recognized that a safety-conscious attitude and work practices contribute to a healthy, safe and accident-free working environment.

It is imperative to apply and be familiar with the Occupational Health and Safety Act and Regulations. As well, it is essential to determine workplace hazards and take measures to protect onself, co-workers, the public and the environment.

As safety education is an integral part of a training in all jurisdictions, personal safety practices are not recorded in this document. However, the technical safety aspect relating to each task and sub-task are included throughout this analysis.

# ANALYSIS

## BLOCK A

## OCCUPATIONAL SKILLS

*Trends:* *To the use of computers for the recording of data such as maintenance performed, planned maintenance schedules, parts availability and test results.*

**Task 1** **Completes maintenance records and documents.**

*Related Components:* Company record forms, vehicle history, maintenance checklists, computer printouts.
Materials: None identified.

*Tools and Equipment:* Computer, data bases, writing implements.

**Sub-task**

**1.01** **Documents work performed.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

1.01.01 knowledge of documenting procedures

1.01.02 knowledge of type of information required

1.01.03 ability to document accurately

**Sub-task**

**1.02** **Completes maintenance schedules and checklists.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

1.02.01 knowledge of recording procedures

1.02.02 knowledge of standard maintenance schedules

1.02.03 knowledge of company policies and procedures

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 1.02.04 | ability to interpret manufacturers□ recommendations |
| 1.02.05 | ability to determine workable schedules |
| 1.02.06 | ability to manually record information |
| 1.02.07 | ability to use computer |

**Sub-task**

**1.03 Records road test results.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 1.03.01 | knowledge of types of road tests |
| 1.03.02 | knowledge of required information |
| 1.03.03 | ability to identify vehicle faults |
| 1.03.04 | ability to accurately and thoroughly record information |
| 1.03.05 | ability to use computer |
| 1.03.06 | ability to operate road test equipment |

**Sub-task**

**1.04 Records inspection results.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 1.04.01 | knowledge of types of inspections |
| 1.04.02 | knowledge of vehicle fault |
| 1.04.03 | knowledge of required information |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 1.04.04 | ability to record accurately all required information |
| 1.04.05 | ability to use computer |

**Task 2** **Operates and maintains tools and equipment.**

*Related Components:* Hand tools, power tools, safety equipment, special tools, measuring equipment.
Materials: Greases, lubricants, tape.

*Tools and Equipment:* Files, cutters.

**Sub-task**

**2.01 Uses general hand tools.**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 2.01.01 | knowledge of types of hand tools |
| 2.01.02 | ability to use appropriate hand tools |
| 2.01.03 | ability to identify damaged tools |
| 2.01.04 | ability to maintain hand tools |

**Sub-task**

**2.02 Operates power tools.**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 2.02.01 | knowledge of types of power tools |
| 2.02.02 | knowledge of company policies and procedures |

**Supporting Knowledge & Abilities**

2.02.03 ability to use appropriate power tools

2.02.04 ability to determine condition of power tools

**Sub-task**

**2.03 Operates/uses measuring devices.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

2.03.01 knowledge of types of measuring devices

2.03.02 ability to use appropriate measuring devices

2.03.03 ability to identify damaged or defective measuring devices

2.03.04 ability to maintain measuring devices

**Sub-task**

**2.04 Operates lifting and supporting equipment.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

2.04.01 knowledge of types of lifting and supporting equipment

2.04.02 knowledge of application of lifting and supporting equipment

2.04.03 knowledge of company policies and procedures

2.04.04 knowledge of equipment operating procedures

2.04.05 ability to set up lifting and supporting equipment

2.04.06 ability to identify required lifting and supporting equipment

**Sub-task**

**2.05 Sets up and operates diagnostic and testing equipment.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 2.05.01 | knowledge of set-up procedures |
| 2.05.02 | knowledge of operation of equipment |
| 2.05.03 | knowledge of types of diagnostic and testing equipment |
| 2.05.04 | ability to determine required diagnostic test |
| 2.05.05 | ability to evaluate test results |
| 2.05.06 | ability to maintain equipment |

**Sub-task**

**2.06 Sets up and operates staging equipment.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 2.06.01 | knowledge of types of staging equipment |
| 2.06.02 | knowledge of set-up procedures |
| 2.06.03 | knowledge of operating procedures |
| 2.06.04 | ability to select required staging equipment |

**Task 3** **Inspects and cleans vehicle components.**

*Related Components:* All vehicle operating systems and components.
Materials: Cleaning agents, cloths, lubricants.

*Tools and Equipment:* Brushes, cleaning equipment.

**Sub-task**

**3.01** **Inspects vehicle operating systems and related components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 3.01.01 | knowledge of vehicle operating systems and related components |
| 3.01.02 | knowledge of required manuals |
| 3.01.03 | knowledge of inspection procedures |
| 3.01.04 | knowledge of manufacturers□ specifications |
| 3.01.05 | knowledge of required inspection tools |
| 3.01.06 | knowledge of vehicle handling characteristics |
| 3.01.07 | knowledge of regulations (GVW-gross vehicle weight) |
| 3.01.08 | knowledge of vehicle maintenance history |
| 3.01.09 | ability to detect potential defects or damage |
| 3.01.10 | ability to verify alignments |
| 3.01.11 | ability to interpret information |

**Sub-task**

**3.02** **Cleans vehicle components for inspection purposes.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 3.02.01 | knowledge of cleaning equipment and methods |
| 3.02.02 | knowledge of cleaning agents |
| 3.02.03 | knowledge of material safety data sheets |
| 3.02.04 | knowledge of potential safety hazards |
| 3.02.05 | knowledge of environmental regulations |
| 3.02.06 | ability to determine damage or defect |

**Sub-task**

**3.03 Interprets inspection results.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 3.03.01 | knowledge of types of inspection |
| 3.03.02 | knowledge of maintenance manual recommendations |
| 3.03.03 | ability to analyze test results of system |
| 3.03.04 | ability to identify component malfunction |

**Task 4 Conducts road tests.**

*Related Components:* Vehicle.
Materials: None identified.

*Tools and Equipment:* Test equipment.

**Sub-task**

**4.01 Determines type of road test required.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 4.01.01 | knowledge of types of road tests |
| 4.01.02 | knowledge of company policies and procedures |
| 4.01.03 | knowledge of required road test equipment |
| 4.01.04 | ability to gather required information |

**Sub-task**

**4.02 Selects road test diagnostic equipment.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 4.02.01 | knowledge of types of road test equipment |
| 4.02.02 | ability to select required test equipment depending on vehicle operating problems |

**Sub-task**

**4.03 Hooks-up road test diagnostic equipment.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 4.03.01 | knowledge of hook-up procedures |
| 4.03.02 | ability to verify proper hook-up |
| 4.03.03 | ability to run trial test of equipment |

**Sub-task**

**4.04 Drives vehicle.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 4.04.01 | knowledge of standard operating conditions |
| 4.04.02 | knowledge of type of vehicle |
| 4.04.03 | knowledge of licensing requirements to test drive vehicle |
| 4.04.04 | ability to operate various types of vehicles (transport) |
| 4.04.05 | ability to gather required information |

**Sub-task**

**4.05 Interprets road test results.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 4.05.01 | knowledge of type of road test |
| 4.05.02 | knowledge of vehicle problem |
| 4.05.03 | ability to analyze road test results of vehicle |
| 4.05.04 | ability to identify vehicle operating problems |

**Task 5 Maintains vehicle.**

*Related Components:* Vehicle operating systems and related components.
Materials: Lubricants, fluids, filters.

*Tools and Equipment:* Maintenance manuals, company policies and procedures, shop tools and equipment, vehicle history, computer, diagnostic equipment, Original Equipment Manufacturers' (EOMs) manuals, Material Safety Data Sheets (MSDS), computer read-outs, requisitions, work orders, work sheets.

**Sub-task**

**5.01 Replenishes fluids.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 5.01.01 | knowledge of fluid types and classifications |
| 5.01.02 | knowledge of company policies and procedures |
| 5.01.03 | knowledge of maintenance schedules |
| 5.01.04 | knowledge of procedures for clean-up and disposal of fluids |
| 5.01.05 | ability to verify condition of fluids |
| 5.01.06 | ability to interpret manufacturers' specifications |
| 5.01.07 | ability to drain fluids |

**Sub-task**

**5.02 Replaces filters.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 5.02.01 | knowledge of filtering systems |
| 5.02.02 | knowledge of company policies and procedures |
| 5.02.03 | knowledge of maintenance schedules |
| 5.02.04 | knowledge of procedures for disposal of filters |
| 5.02.05 | ability to check condition of filters |

**Supporting Knowledge & Abilities**

5.02.06 ability to interpret manufacturers□ specifications

5.02.07 ability to clean filters

**Sub-task**

**5.03 Lubricates assemblies and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

5.03.01 knowledge of types of lubricants and their properties

5.03.02 knowledge of lubrication systems

5.03.03 knowledge of company policies and procedures

5.03.04 knowledge of maintenance schedules

5.03.05 ability to interpret manufacturers□ specifications

5.03.06 ability to select appropriate lubricant

**Sub-task**

**5.04 Consults required documentation.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

5.04.01 knowledge of different types of manuals and documentation

5.04.02 knowledge of MSDS requirements

5.04.03 ability to access required information from manuals and documents/forms

5.04.04 ability to analyze technical information

## BLOCK B

## CHASSIS AND FRAMES

*Trends:* *Towards lighter but stronger materials; improved engineering of materials; smoother ride; lower maintenance costs; less maintenance, and, incorporated scaling systems.*

**Task 6** **Modifies length and height of frames.**

*Related Components:* Frame rails, cross members, gusset, fasteners.
Materials: Frame rails, cross members, gussets, fasteners, required metals, and welding materials.

*Tools and Equipment:* Frame alignment machine, plumb bob, measuring equipment, basic hand tools, basic power tools, cutting tools, welding torch, lifting devices, cutting devices.

**Sub-task**

**6.01** **Cuts frames.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 6.01.01 | knowledge of cutting procedures |
| 6.01.02 | knowledge of required cutting tools |
| 6.01.03 | knowledge of frame structure and materials |
| 6.01.04 | knowledge of company policies and procedures |
| 6.01.05 | ability to interpret manufacturers specifications |
| 6.01.06 | ability to measure accurately |
| 6.01.07 | ability to secure work area |

**Sub-task**

**6.02 Drills frames.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 6.02.01 | knowledge of drilling procedures |
| 6.02.02 | knowledge of required drilling tools and attachments |
| 6.02.03 | knowledge of materials |
| 6.02.04 | ability to interpret manufacturers□ specifications |
| 6.02.05 | ability to align pieces |
| 6.02.06 | ability to measure accurately |

**Sub-task**

**6.03 Welds frames and components.**

**Supporting Knowledge & Abilities**

**(NOT COMMON CORE)**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| no | yes | yes | no | no | yes | no | no | no | yes | ND | NV |

| | |
|---|---|
| 6.03.01 | knowledge of welding procedures |
| 6.03.02 | knowledge of required welding equipment |
| 6.03.03 | knowledge of company policies and procedures |
| 6.03.04 | knowledge of welding materials |
| 6.03.05 | knowledge of frame materials |
| 6.03.06 | knowledge of frames and components |
| 6.03.07 | ability to interpret manufacturers□ recommendations |

**Supporting Knowledge & Abilities**

| | | |
|---|---|---|
| | 6.03.08 | ability to operate welding equipment |
| | 6.03.09 | ability to secure work area |

**Sub-task**

**6.04 Replaces components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 6.04.01 | knowledge of types of components |
| 6.04.02 | knowledge of potential hazards |
| 6.04.03 | knowledge of torque specifications |
| 6.04.04 | knowledge of alignment specifications and procedures |
| 6.04.05 | knowledge of required tools |
| 6.04.06 | knowledge of types and grades of fasteners |
| 6.04.07 | knowledge of reusable guidelines |
| 6.04.08 | ability to remove and install components according to procedures |
| 6.04.09 | ability to re-align components |
| 6.04.10 | ability to replace fasteners |

**Task 7 Works on suspensions.**

*Related Components:* Springs, mounting devices, alignment devices, axle housings, valves, rubber block suspensions, spring suspension, air spring suspension, torsion bar suspension, walking beam suspension, hangers, torque rods, transverse rods, U-bolts, spring seats, shocks, shock brackets, saddles, and seats.
Materials: Greases, lubricants, fasteners, shim materials, spring steel.

*Tools and Equipment:* Re-alignment materials, measuring devices, lifting and supporting devices, shop manuals, hand tools, torque wrenches (large), power tools, hydraulic equipment, press, reamers, alignment machine, torch, magnetic drill.

**Sub-task**

**7.01 Repairs suspensions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

7.01.01 knowledge of suspension systems and components

7.01.02 knowledge of affected components

7.01.03 knowledge of repair or replacement procedures

7.01.04 knowledge of adjustment procedures and specifications

7.01.05 ability to inspect parts and components for damage and wear

7.01.06 ability to remove and replace damaged/worn components

7.01.07 ability to make adjustments according to specifications

**Sub-task**

**7.02 Modifies suspensions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

7.02.01 knowledge of suspension systems and components

7.02.02 knowledge of effects of modifications on related components

**Supporting Knowledge & Abilities**

| | | |
|---|---|---|
| | 7.02.03 | knowledge of modification procedures |
| | 7.02.04 | knowledge of legislated requirements applicable to suspension systems modifications |
| | 7.02.05 | ability to interpret manufacturers recommendations |
| | 7.02.06 | ability to install additional components |

**Sub-task**

**7.03 Rebuilds suspensions.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | | |
|---|---|---|
| | 7.03.01 | knowledge of types of rebuilds |
| | 7.03.02 | knowledge of components and their operation |
| | 7.03.03 | knowledge of supporting systems |
| | 7.03.04 | knowledge of testing procedures |
| | 7.03.05 | ability to interpret manufacturers recommendations |
| | 7.03.06 | ability to remove and install components |

**Task 8 Works on hitches and couplers.**

| | |
|---|---|
| *Related Components:* | 5th wheel, pintle hitch, controls, slides, related hardware, king pin, Teflon plate.<br>Materials: Shop supplies, lubricants, and metals. |
| *Tools and Equipment:* | 5th wheel adjuster, pin gauge, pry bar, gauges, hand tools, power tools, welding equipment, lifting and supporting devices, specialized tools. |

**Sub-task**

**8.01 Troubleshoots hitches and couplers.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 8.01.01 | knowledge of hitching and coupling systems and their related components |
| 8.01.02 | knowledge of inspection and testing procedures |
| 8.01.03 | ability to interpret manufacturers□ specifications |
| 8.01.04 | ability to inspect and test hitching and coupling systems |
| 8.01.05 | ability to identify damaged parts and components |
| 8.01.06 | ability to interpret test results |

**Sub-task**

**8.02 Removes hitches and couplers.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 8.02.01 | knowledge of removal procedures |
| 8.02.02 | knowledge of disassembly procedures |
| 8.02.03 | knowledge of supporting systems |
| 8.02.04 | knowledge of types of hitches and couplers |
| 8.02.05 | ability to disassemble according to specifications |

**Sub-task**

**8.03 Repairs hitches and couplers.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 8.03.01 | knowledge of types of hitching and couplings |
| 8.03.02 | knowledge of supporting systems |
| 8.03.03 | knowledge of repair procedures |
| 8.03.04 | knowledge of component operation |
| 8.03.05 | ability to replace components |

**Sub-task**

**8.04 Installs hitches and couplers.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 8.04.01 | knowledge of supporting systems |
| 8.04.02 | knowledge of assembly procedures |
| 8.04.03 | knowledge of components and controls |
| 8.04.04 | knowledge of installation procedures |
| 8.04.05 | knowledge of welding procedures |
| 8.04.06 | ability to assemble hitches and couplers |
| 8.04.07 | ability to fabricate mounting and hardware |
| 8.04.08 | ability to interpret design instructions |
| 8.04.09 | ability to install controls and components |

## BLOCK C

## AIR SYSTEMS, BRAKES AND STEERING

*Trends:* *Better engineering resulting in greater efficiency; better serviceability of systems; use of anti-skid devices; lighter materials; improved cooling systems for brakes; discs as opposed to drums; less maintenance; environmentally improved (removal of asbestos); towards a better feel for the road; more electronics in the steering systems (steer-by-wire); longer maintenance intervals, more stringent regulations.*

**Task 9** **Works on air systems.**

*Related Components:* Air compressor, reservoir, lines, dryer, valves, gauges, governor, chambers, filters, alcohol evaporator, air compressor drives.
Materials: Rubber hoses, fittings, plastic lines, O-ring, sealant, repair kit, fasteners, fluids, lubricants, soapy water.

*Tools and Equipment:* Listening devices, gauges, hand tools, power tools, multimeter, timing devices, pullers.

**Sub-task**

**9.01** **Troubleshoots air systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 9.01.01 | knowledge of inspection and test procedures |
| 9.01.02 | knowledge of air systems and components |
| 9.01.03 | knowledge of air system specifications |
| 9.01.04 | ability to inspect systems and components |
| 9.01.05 | ability to identify damaged and worn parts and components |
| 9.01.06 | ability to interpret test results |

**Sub-task**

**9.02 Disassembles air systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 9.02.01 | knowledge of disassembly procedures |
| 9.02.02 | knowledge of manufacturers' recommendations |
| 9.02.03 | knowledge of air systems and components |
| 9.02.04 | knowledge of supporting systems |

**Sub-task**

**9.03 Repairs air systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 9.03.01 | knowledge of adjustment procedures |
| 9.03.02 | knowledge of types of components |
| 9.03.03 | knowledge of guidelines for reusable parts |
| 9.03.04 | knowledge of repair procedures and specifications |
| 9.03.05 | knowledge of system operation |
| 9.03.06 | knowledge of applicable regulations |
| 9.03.07 | ability to replace parts and components |
| 9.03.08 | ability to identify damaged or worn parts |

**Sub-task**

**9.04 Rebuilds air systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 9.04.01 | knowledge of types of rebuilds |
| 9.04.02 | knowledge of air systems and components |
| 9.04.03 | knowledge of testing procedures |
| 9.04.04 | ability to interpret manufacturers' recommendations |
| 9.04.05 | ability to replace parts and components |

**Sub-task**

**9.05 Installs air systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 9.05.01 | knowledge of assembly procedures |
| 9.05.02 | knowledge of installation procedures |
| 9.05.03 | knowledge of supporting systems |
| 9.05.04 | ability to install parts and components |

**Task 10 Works on braking systems.**

*Related Components:* Slack adjusters (automatic/manual), drums, shoes, hardware, cams, bushings, bearings, brake chambers, backing plates, spiders, wheel speed sensors, modulators, valves, ECU, boosters, master cylinder, calipers, rotors.
Materials: Solvents, soaps, fluids.

*Tools and Equipment:* Specialized diagnostic equipment meter, lifting and supporting devices, brake bleeder, brake lathes, hand tools, power tools.

**Sub-task**

**10.01 Troubleshoots braking systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 10.01.01 | knowledge of braking systems and braking components |
| 10.01.02 | knowledge of inspection and test procedures |
| 10.01.03 | knowledge of supporting systems |
| 10.01.04 | ability to inspect and test braking systems |
| 10.01.05 | ability to identify damaged or worn parts |

**Sub-task**

**10.02 Disassembles and assembles braking systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 10.02.01 | knowledge of disassembly and assembly procedures |
| 10.02.02 | knowledge of braking systems and components |
| 10.02.03 | knowledge of supporting systems |
| 10.02.04 | ability to interpret manufacturers□ specifications |

**Sub-task**

**10.03 Repairs braking systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 10.03.01 | knowledge of adjustment procedures |
| 10.03.02 | knowledge of repair and replacement procedures |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 10.03.03 | ability to identify damaged and worn parts |
| 10.03.04 | ability to remove and replace components |
| 10.03.05 | ability to make adjustments |
| 10.03.06 | ability to test braking systems |
| 10.03.07 | ability to interpret test results |

**Sub-task**

**10.04 Rebuilds braking systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 10.04.01 | knowledge of types of brakes and braking systems |
| 10.04.02 | knowledge of rebuild procedures |
| 10.04.03 | knowledge of manufacturers□ specifications and recommendations |

**Task 11 Works on steering systems.**

| | |
|---|---|
| *Related Components:* | Steering box (es), steering pump, hoses, steering columns, arms, tie rod and ends, king pins, u-joints, shafts, assist cylinders, fluids, spindles, reservoirs, filters, belts and gears, pulleys, couplings. Materials: Fluids, lubricants, fasteners. |
| *Tools and Equipment:* | Wheel alignment machine, steering analyzer, vehicle history, hand tools, specialty tools, lifting and supporting devices. |

**Sub-task**

**11.01 Troubleshoots steering systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 11.01.01 | knowledge of steering systems and components |
| 11.01.02 | knowledge of steering system specifications |
| 11.01.03 | knowledge of inspection and testing procedures |
| 11.01.04 | ability to inspect and test components |
| 11.01.05 | ability to interpret test results |
| 11.01.06 | ability to identify damaged and worn parts and components |

**Sub-task**

**11.02 Disassembles and reassembles steering systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 11.02.01 | knowledge of steering systems and components |
| 11.02.02 | knowledge of disassembly and assembly procedures |
| 11.02.03 | knowledge of supporting systems |
| 11.02.04 | ability to interpret manufacturers[ ] specifications |

**Sub-task**

**11.03 Repairs steering systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 11.03.01 | knowledge of repair and replacement procedures |
| 11.03.02 | knowledge of adjustment procedures |
| 11.03.03 | knowledge of steering systems and components |
| 11.03.04 | ability to remove and replace damaged components |
| 11.03.05 | ability to make adjustments according to specifications |
| 11.03.06 | ability to test operation of steering systems after repair |

**Sub-task**

**11.04 Rebuilds steering system components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 11.04.01 | knowledge of disassembly procedures |
| 11.04.02 | knowledge of rebuild procedures |
| 11.04.03 | knowledge of components |
| 11.04.04 | knowledge of supporting systems |
| 11.04.05 | ability to interpret manufacturers specifications |
| 11.04.06 | ability to disassemble components |
| 11.04.07 | ability to test rebuild |
| 11.04.08 | ability to assemble components |

**Task 12 Works on tires, wheels, rims and hubs.**

*Related Components:* Bearings, tires, wheels, hubs, cover, locking spindles, rims, mounting drums, discs, king pin, hardware, seals, wedges.
Materials: Sealants, lubricants, soapy water.

*Tools and Equipment:* Dial indicators, balancers, specialized equipment, torque wrenches, lifting and supporting devices, gauges, air chuck.

**Sub-task**

**12.01 Troubleshoots tires, wheels, rims and hubs.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 12.01.01 | knowledge of tires, wheels, rims and hubs and specifications |
| 12.01.02 | knowledge of inspection and test procedures |
| 12.01.03 | ability to inspect and test tires, wheels, rims and hubs |
| 12.01.04 | ability to interpret test results |

**Sub-task**

**12.02 Removes tires, wheels, rims and hubs.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 12.02.01 | knowledge of removal procedures |
| 12.02.02 | knowledge of disassembly procedures |
| 12.02.03 | ability to interpret manufacturers recommendations and specifications |
| 12.02.04 | ability to disassemble tires, wheels, rims and hubs |

**Sub-task**

**12.03 Repairs tires, wheels, rims and hubs.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 12.03.01 | knowledge of repair and replacement procedures |
| 12.03.02 | knowledge of adjustment procedures |
| 12.03.03 | ability to identify damaged or worn parts |
| 12.03.04 | ability to replace damaged or worn components |
| 12.03.05 | ability to adjust tires, wheels, rims and hubs according to specifications |
| 12.03.06 | ability to test tires, wheels, rims and hubs |

**Sub-task**

**12.04 Installs tires, wheels, rims and hubs.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 12.04.01 | knowledge of assembly procedures and specifications |
| 12.04.02 | knowledge of installation procedures |
| 12.04.03 | ability to interpret manufacturers recommendations |
| 12.04.04 | ability to reassemble tires, wheels, rims and hubs |

## BLOCK D

## ELECTRICAL AND ELECTRONIC SYSTEMS

*Trends:* *Greater emphasis placed on electrical and electronic systems.*

**Task 13** **Works on electrical systems.**

*Related Components:* Batteries, belts, connections.
Materials: None identified.

*Tools and Equipment:* Battery tester, hand tools, manuals, wire brush, DVOM, specialized diagnostic equipment, jumper cables.

**Sub-task**

**13.01 Maintains batteries.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

13.01.01 knowledge of batteries and battery specifications

13.01.02 ability to check battery condition

13.01.03 ability to check electrolyte condition and levels

13.01.04 ability to load-test batteries

**Sub-task**

**13.02 Maintains belts.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

13.02.01 knowledge of belt specifications

13.02.02 ability to determine belt condition and tension

13.02.03 ability to adjust and replace belts

**Sub-task**

**13.03 Maintains components and connections.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 13.03.01 | knowledge of electrical continuity |
| 13.03.02 | ability to inspect components and connections |
| 13.03.03 | ability to identify damaged or worn parts and poor connections |
| 13.03.04 | ability to clean and secure terminals and cable connections |

**Task 14 Works on charging systems.**

*Related Components:* Alternators, generators, regulators, battery cables, wiring, fuses and circuit breakers, gauges.
Materials: None identified.

*Tools and Equipment:* Hand and power tools, shop equipment, electrical tools and equipment, DVOM, specialized equipment.

**Sub-task**

**14.01 Troubleshoots and tests charging systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 14.01.01 | knowledge of charging systems and components |
| 14.01.02 | knowledge of charging system specifications |
| 14.01.03 | knowledge of inspection and test procedures |
| 14.01.04 | ability to inspect and test charging system parts and components |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 14.01.05 | ability to interpret test results |
| 14.01.06 | ability to identify damaged or worn charging system parts and components |

**Sub-task**

**14.02 Disassembles charging systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | no | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 14.02.01 | knowledge of disassembly procedures |
| 14.02.02 | knowledge of supporting systems |
| 14.02.03 | ability to interpret manufacturers□ specifications |

**Sub-task**

**14.03 Repairs charging systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 14.03.01 | knowledge of procedures for repairing or replacing charging system parts and components |
| 14.03.02 | ability to interpret manufacturers□ specifications |
| 14.03.03 | ability to remove and replace damaged and worn parts and components |

**Sub-task**

**14.04 Reassembles charging systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 14.04.01 | knowledge of assembly procedures |
| 14.04.02 | ability to interpret manufacturers□ specifications |
| 14.04.03 | ability to test repairs |

**Task 15** **Works on starting systems.**

*Related Components:* Starters and solenoids, cables, connectors, batteries, relays, switches.
Materials: None identified.

*Tools and Equipment:* Hand and power tools, shop equipment, specialized equipment, DVOM.

**Sub-task**

**15.01 Troubleshoots and tests starting systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 15.01.01 | knowledge of starting systems and components |
| 15.01.02 | knowledge of starting systems specifications |
| 15.01.03 | knowledge of inspection and test procedures |
| 15.01.04 | ability to inspect and test starting system parts and components |
| 15.01.05 | ability to interpret test results |
| 15.01.06 | ability to identify damaged or worn starting system parts and components |

**Sub-task**

**15.02 Disassembles starting systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 15.02.01 | knowledge of disassembly procedures |
| 15.02.02 | knowledge of supporting systems |
| 15.02.03 | ability to interpret manufacturers recommendations |

**Sub-task**

**15.03 Repairs starting systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 15.03.01 | knowledge of procedures for repairing or replacing starting systems, parts and components |
| 15.03.02 | ability to interpret manufacturers specifications |
| 15.03.03 | ability to remove and replace damaged and worn parts and components |

**Sub-task**

**15.04 Reassembles starting systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 15.04.01 | knowledge of assembly procedures |
| 15.04.02 | ability to interpret manufacturers specifications |
| 15.04.03 | ability to test repairs |

**Task 16 Works on ignition systems.**

*Related Components:* Magneto coils, condensers, points distributors, H.T. wire, spark plugs, switches, resistors, wiring, relays, pick-up coils, distributors caps, rotors.
Materials: None identified.

*Tools and Equipment:* Hand and power tools, shop tools, electrical tools and equipment, scope scanners, DVOM.

**Sub-task**

**16.01 Troubleshoots and tests ignition systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 16.01.01 | knowledge of ignition systems and components |
| 16.01.02 | knowledge of ignition system specifications |
| 16.01.03 | knowledge of inspection and test procedures |
| 16.01.04 | ability to inspect and test ignition system parts and components |
| 16.01.05 | ability to interpret test results |
| 16.01.06 | ability to identify damaged or worn ignition system parts and components |

**Sub-task**

**16.02 Disassembles ignition systems and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 16.02.01 | knowledge of disassembly procedures |
| 16.02.02 | knowledge of supporting systems |
| 16.02.03 | ability to interpret manufacturers recommendations |

**Sub-task**

**16.03 Repairs ignition systems and components.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 16.03.01 | knowledge of procedures for repairing or replacing ignition system parts and components |
| 16.03.02 | ability to interpret manufacturers[] specifications |
| 16.03.03 | ability to remove and replace damaged and worn parts and components |

**Sub-task**

**16.04 Reassembles ignition systems and components.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 16.04.01 | knowledge of assembly procedures |
| 16.04.02 | ability to interpret manufacturers[] specifications |
| 16.04.03 | ability to test repairs |

**Task 17 Works on electrical conductors and connectors.**

*Related Components:* Wiring, single and multiple connectors, fuses, circuit breakers. Materials: None identified.

*Tools and Equipment:* Hand and power tools, shop tools and equipment, electrical tools and equipment, wire strippers.

**Sub-task**

**17.01 Troubleshoots and tests electrical conductors.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 17.01.01 | knowledge of electrical conductors and connectors |
| 17.01.02 | knowledge of inspection and test procedures |
| 17.01.03 | ability to interpret manufacturers' specifications |
| 17.01.04 | ability to inspect and test electrical conductors and connectors |
| 17.01.05 | ability to interpret test results |
| 17.01.06 | ability to identify damaged electrical conductors or connectors |
| 17.01.07 | ability to use conductors and connectors |

**Sub-task**

**17.02 Disassembles electrical conductors.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 17.02.01 | knowledge of disassembly procedures |
| 17.02.02 | knowledge of supporting systems |
| 17.02.03 | ability to interpret manufacturers' recommendations |

**Sub-task**

**17.03 Repairs electrical conductors.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 17.03.01 | knowledge of procedures for repairing or replacing electrical conductors and connectors |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 17.03.02 | ability to interpret manufacturers' specifications |
| 17.03.03 | ability to remove or replace damaged electrical conductors and connectors |

**Sub-task**

**17.04 Reassembles electrical conductors.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 17.04.01 | knowledge of assembly procedures |
| 17.04.02 | ability to interpret manufacturers' specifications |
| 17.04.03 | ability to test repairs |

**Task 18 Works on electronic components.**

*Related Components:* On-board computer system, communication satellites, diagnostic equipment.
Materials: Shop supplies, non serviceable components.

*Tools and Equipment:* Ohmmeters, voltmeters, test rights, specialty tools, crimping solder, continuity testers.

**Sub-task**

**18.01 Troubleshoots and tests electronic components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 18.01.01 | knowledge of electronic components |
| 18.01.02 | knowledge of inspection and test procedures |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 18.01.03 | ability to interpret manufacturers□ specifications |
| 18.01.04 | ability to inspect and test electronic components |
| 18.01.05 | ability to interpret test results |
| 18.01.06 | ability to identify damaged electronic components |

**Sub-task**

**18.02 Replaces electronic components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 18.02.01 | knowledge of procedures for replacing electronic components |
| 18.02.02 | ability to interpret manufacturers□ specifications |
| 18.02.03 | ability to remove and replace damaged electronic components |
| 18.02.04 | ability to test repairs |

**Task 19 Works on electrical and electronic accessories.**

*Related Components:* Instrument gauges, entertainment and comfort accessories, radio, wipers, light system, sensors, GPS.
Materials: None identified.

*Tools and Equipment:* Standard mechanic□s tool kit, test light, DVOM, soldering iron/gun, wire cutters, wire strippers.

**Sub-task**

**19.01 Troubleshoots electrical and electronic accessories.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 19.01.01 | knowledge of electrical and electronic accessories |
| 19.01.02 | knowledge of inspection and test procedures |
| 19.01.03 | ability to interpret manufacturers specifications |
| 19.01.04 | ability to inspect and test electrical and electronic accessories |
| 19.01.05 | ability to interpret test results |
| 19.01.06 | ability to identify damaged electrical and electronic accessories |

**Sub-task**

**19.02 Disassembles electrical and electronic accessories.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 19.02.01 | knowledge of disassembly procedures |
| 19.02.02 | knowledge of supporting systems |
| 19.02.03 | ability to interpret manufacturers recommendations |

**Sub-task**

**19.03 Repairs electrical and electronic accessories.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 19.03.01 | knowledge of procedures for repairing or replacing electrical and electronic accessories |
| 19.03.02 | ability to interpret manufacturers specifications |
| 19.03.03 | ability to remove or replace damaged electrical and electronic accessories |

**Sub-task**

**19.04 Reassembles electrical and electronic accessories.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 19.04.01 | knowledge of assembly procedures |
| 19.04.02 | ability to interpret manufacturers specifications |
| 19.04.03 | ability to test repairs |

## BLOCK E

## CAB AND BODY

*Trends:* *More efficient operation of electrical systems; increased comfort; better engineering; greater safety guidelines; more monitoring systems; different types of refrigerants; more environmental regulations; more environmental friendly materials; electronic climate controls; user friendly equipment; self-monitoring systems; move to unibodies; greater use of corrosion resistant materials; lower centre of gravity for stability; see-through materials; increased payloads; improved aerodynamics; lighter and stronger materials; quieter cab;*

*more ergonomically designed; more bonding to reduce weight and appearance (replacing rivets).*

**Task 20** **Works on HVAC (Heating, Ventilation, Air Conditioning) and refrigeration systems.**

*Related Components:* Compressor, clutch, drives, receiver dryer, expansion valve, evaporator, pressure switches, thermo-couple, monitor devices, controls condenser, hoses, lines, refrigerants, lubricants, filter dryer. Materials: Dye, nitrogen, lubricants, soapy water.

*Tools and Equipment:* Flashlight, leak detector, specialized diagnostic equipment, charging station, recovery unit, leak detector, nitrogen station, basic hand tools, refrigerant analyzer, power tools.

**Sub-task**

**20.01 Troubleshoots HVAC and refrigeration systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 20.01.01 | knowledge of HVAC and refrigeration systems and components |
| 20.01.02 | knowledge of supporting systems |
| 20.01.03 | knowledge of systems specifications, refrigerants and legislated requirements |
| 20.01.04 | knowledge of inspection and test procedures |
| 20.01.05 | ability to inspect and test systems |
| 20.01.06 | ability to interpret test results |
| 20.01.07 | ability to identify damaged and worn HVAC and refrigeration systems parts and components |

**Sub-task**

**20.02 Disassembles HVAC and refrigeration systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 20.02.01 | knowledge of disassembly procedures |
| 20.02.02 | knowledge of supporting systems |
| 20.02.03 | ability to interpret manufacturers recommendations |

**Sub-task**

**20.03 Repairs HVAC and refrigeration systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 20.03.01 | knowledge of repair and replacement procedures |
| 20.03.02 | knowledge of regulations |
| 20.03.03 | ability to interpret manufacturers specifications |
| 20.03.04 | ability to remove and replace damaged or worn parts and components |
| 20.03.05 | ability to purge and recharge system in accordance with legislated requirements |
| 20.03.06 | ability to test repairs |

**Sub-task**

**20.04 Installs HVAC and refrigeration systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 20.04.01 | knowledge of installation procedures |
| 20.04.02 | knowledge of assembly procedures |

20.04.03 knowledge of supporting systems

**Supporting Knowledge & Abilities**

20.04.04 ability to interpret manufacturers□ specifications

20.04.05 ability to test installation

**Task 21 Works on trailer bodies.**

*Related Components:* Doors, bumpers, tanks, landing gear, frames, valves, manifolds, piping, gauges, transfer pumps.
Materials: Bonding compounds, sealants, abrasives, shop supplies hardware, metal.

*Tools and Equipment:* Smoke bomb, hand tools, power tools, lifting and supporting devices, clamping equipment, specialized tools, cutting tools, staging platform.

**Sub-task**

**21.01 Troubleshoots trailer body components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | no | yes | yes | ND | NV |

21.01.01 knowledge of specifications

21.01.02 knowledge of inspection and test procedures

21.01.03 knowledge of trailer body components

21.01.04 ability to inspect and test components

21.01.05 ability to interpret test results

21.01.06 ability to identify damaged and worn trailer body components

**Sub-task**

**21.02 Removes trailer body components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 21.02.01 | knowledge of removal procedures |
| 21.02.02 | knowledge of disassembly procedures |
| 21.02.03 | knowledge of supporting systems |
| 21.02.04 | ability to disassemble components |

**Sub-task**

**21.03 Repairs trailer body components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| no | yes | yes | yes | yes | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 21.03.01 | knowledge of repair procedures |
| 21.03.02 | ability to interpret manufacturers□ specifications |
| 21.03.03 | ability to replace damaged components |
| 21.03.04 | ability to test components |

**Sub-task**

**21.04 Installs trailer body mechanical components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | no | yes | yes | ND | NV |

| | |
|---|---|
| 21.04.01 | knowledge of assembly procedures |

21.04.02 knowledge of installation procedures

**Supporting Knowledge & Abilities**

21.04.03 ability to interpret manufacturers□ specifications

21.04.04 ability to assembly components

**Task 22 Works on cab body and trim.**

*Related Components:* Cab assembly, doors, windows, hoods, bumpers, fenders, fairings, hardware.
Materials: Bonding compounds, paint, sealants, abrasives, finishing materials, shop supplies, hardware, metal, plywood, soapy water.

*Tools and Equipment:* Leak detector, hand tools, power tools, lifting and supporting devices, specialized tools, welding equipment, clamping equipment, cutting tools.

**Sub-task**

**22.01 Removes cab body trim and components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| no | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

22.01.01 knowledge of cab body trim and components

22.01.02 knowledge of cab body and trim specifications

22.01.03 knowledge of types of damage and defects

22.01.04 knowledge of removal procedures

22.01.05 knowledge of disassembly procedures

22.01.06 ability to detect damaged or broken components

22.01.07 ability to disassemble components

22.01.08 ability to inspect cab body and trim

**Sub-task**

**22.02 Repairs cab body and trim.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| no | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 22.02.01 | knowledge of repair and replacement procedures |
| 22.02.02 | ability to interpret manufacturers□ specifications |
| 22.02.03 | ability to replace components |

**Sub-task**

**22.03 Installs cab body and trim.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| no | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 22.03.01 | knowledge of assembly procedures |
| 22.03.02 | knowledge of installation procedures |
| 22.03.03 | ability to interpret manufacturers□ specifications |
| 22.03.04 | ability to assemble components |

## BLOCK F

## ENGINE AND SUPPORTING SYSTEMS

*Trends:* *Increased horsepower; fewer mechanical parts, more efficient operations considerations; environmental (emission controls-cleaner burning engines); lighter engines; increase in use of more precise tools; increase in specialized training; higher engine temperature to meet emission standards; larger cooling system capacity; small and lighter radiators; longer interval between coolant changes; better design for better aerodynamics and cooling capacity; more environmental regulations for disposal of coolants; synthetic oils; longer intervals between oil changes in part due to more efficient filters; better design of lubrication systems; higher fuel injection pressure; computer controlled; alternate fuels; fewer moving parts; quieter operation of exhaust and intake system; lower emission levels.*

**Task 23** **Works on engines.**

*Related Components:* Cylinder heads, turbo, cylinder, liners, valves, pistons, rods, crank shaft, cam shaft, valve train, fly wheel, etc.
Materials: Dyes, solvents, rags, abrasives, brushes, lubricants, acids.

*Tools and Equipment:* Black light, manuals, dynamometer, diagnostic tools, hand tools, power tools, P.P.E. (Personal Protective Equipment).

**Sub-task**

**23.01 Troubleshoots engine operation.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 23.01.01 | knowledge of engine and components operation |
| 23.01.02 | knowledge of inspection and test procedures |
| 23.01.03 | ability to interpret manufacturers□ specifications |
| 23.01.04 | ability to inspect and test engine operation, parts and components |
| 23.01.05 | ability to troubleshoot mechanical engine management system |
| 23.01.06 | ability to interpret test results |

23.01.07 ability to identify damaged or worn engine parts

**Sub-task**

**23.02 Disassembles engines.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

23.02.01 knowledge of disassembly procedures

23.02.02 knowledge of supporting systems

23.02.03 ability to interpret manufacturers□ specifications

**Sub-task**

**23.03 Repairs engines.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

23.03.01 knowledge of engine repair procedures

23.03.02 ability to interpret manufacturers□ specifications

23.03.03 ability to identify damaged and worn parts and components

23.03.04 ability to replace components

23.03.05 ability to test repair

**Sub-task**

**23.04 Installs engines.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

23.04.01 knowledge of assembly procedures

23.04.02 knowledge of installation procedures

23.04.03 knowledge of supporting systems

23.04.04 ability to interpret manufacturers□ specifications

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 23.04.05 | ability to assemble engine parts and components | | | | | |

**Sub-task**

| **23.05** | **Rebuilds engine components.** | | | | **Supporting Knowledge & Abilities** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |
| | | | | | 23.05.01 | knowledge of disassembly procedures | | | | | |
| | | | | | 23.05.02 | knowledge of rebuild procedures | | | | | |
| | | | | | 23.05.03 | knowledge of components | | | | | |
| | | | | | 23.05.04 | knowledge of supporting systems | | | | | |
| | | | | | 23.05.05 | ability to interpret manufacturers□ specifications | | | | | |
| | | | | | 23.05.06 | ability to disassemble components | | | | | |
| | | | | | 23.05.07 | ability to test rebuild | | | | | |

**Task 24** **Works on cooling systems.**

*Related Components:* Radiators, water pump, thermostat, drives, belts, controlling devices, gauges, fan, oil coolers, by-pass, sensors, hoses, lines, pulley, cap, fan hub, fan blade, shroud, etc.
Materials: Dye, hardware, gasket material, sealants, hoses, abrasives, solder, shop supplies, coolant.

*Tools and Equipment:* Coolant testing materials, diagnostic equipment, specialized equipment, hand tools, power tools.

**Sub-task**

| **24.01** | **Troubleshoots cooling systems.** | | | | **Supporting Knowledge & Abilities** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |
| | | | | | 24.01.01 | knowledge of cooling systems and components operation | | | | | |
| | | | | | 24.01.02 | knowledge of supporting systems | | | | | |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 24.01.03 | knowledge of coolants, additives and contaminants |
| 24.01.04 | knowledge of cooling system specifications |
| 24.01.05 | ability to inspect and test cooling system and components |
| 24.01.06 | ability to interpret test results |
| 24.01.07 | ability to identify damaged and worn parts and components |

**Sub-task**

**24.02 Disassembles cooling systems.**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 24.02.01 | knowledge of supporting systems |
| 24.02.02 | knowledge of disassembly procedures |
| 24.02.03 | ability to interpret manufacturers□ specifications |
| 24.02.04 | ability to remove parts and components |

**Sub-task**

**24.03 Repairs cooling systems.**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 24.03.01 | knowledge of repair procedures |
| 24.03.02 | knowledge of cooling system specifications |
| 24.03.03 | ability to identify damaged and worn parts and components |
| 24.03.04 | ability to replace damaged and worn parts |

**Sub-task**

**24.04 Installs cooling systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 24.04.01 | knowledge of assembly procedures |
| 24.04.02 | knowledge of installation procedures |
| 24.04.03 | ability to interpret manufacturers□ specifications |
| 24.04.04 | ability to assemble cooling systems |
| 24.04.05 | ability to test systems |

**Sub-task**

**24.05 Rebuilds cooling system components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 24.05.01 | knowledge of disassembly procedures |
| 24.05.02 | knowledge of rebuild procedures |
| 24.05.03 | knowledge of components |
| 24.05.04 | knowledge of supporting systems |
| 24.05.05 | ability to interpret manufacturers□ specifications |
| 24.05.06 | ability to disassemble components |
| 24.05.07 | ability to test rebuild |

**Task 25** **Works on lubrication systems.**

*Related Components:* Filter, oil cooler, pump, thermostat, by-pass valve, relief valves, regulating valves, gauges, sensors, oil pan, hardware (nuts, bolts, etc.).
Materials: Dyes, seals, cleaning agents, gasket.

*Tools and Equipment:* Diagnostic equipment, oil analysis equipment, manual, pressure washer, hand tools, power tools.

**Sub-task**

**25.01 Troubleshoots lubrication systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 25.01.01 | knowledge of lubrication system specifications |
| 25.01.02 | knowledge of lubrication systems operation |
| 25.01.03 | knowledge of inspection and testing procedures |
| 25.01.04 | ability to inspect and test lubrication systems, components and parts |
| 25.01.05 | ability to interpret test results |
| 25.01.06 | ability to identify damaged or worn parts |

**Sub-task**

**25.02 Disassembles lubrication systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 25.02.01 | knowledge of disassembly procedures |
| 25.02.02 | knowledge of supporting systems |
| 25.02.03 | ability to interpret manufacturers recommendations |
| 25.02.04 | ability to remove parts and components |

**Sub-task**

**25.03 Repairs lubrication systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 25.03.01 | knowledge of repair procedures (includes special procedures) |
| 25.03.02 | knowledge of lubrication system operation |
| 25.03.03 | knowledge of lubrication system specifications |
| 25.03.04 | ability to identify damaged and worn parts |
| 25.03.05 | ability to replace damaged and worn parts |

**Sub-task**

**25.04 Installs lubrication systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 25.04.01 | knowledge of assembly procedures |
| 25.04.02 | knowledge of installation procedures |
| 25.04.03 | knowledge of supporting systems |
| 25.04.04 | ability to interpret manufacturers recommendations |
| 25.04.05 | ability to assemble parts and components |
| 25.04.06 | ability to test systems |

**Sub-task**

**25.05 Rebuilds lubrication system components.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 25.05.01 | knowledge of disassembly procedures |
| 25.05.02 | knowledge of rebuild procedures |
| 25.05.03 | knowledge of components |
| 25.05.04 | knowledge of supporting systems |
| 25.05.05 | ability to interpret manufacturers□ specifications |
| 25.05.06 | ability to disassemble components |
| 25.05.07 | ability to test rebuild |

**Task 26 Works on fuel systems.**

*Related Components:* Fuel tanks, fuel lines, fuel, injectors, injection pumps, fuel pump, timing advance mechanism, governors, control unit, wiring, valves, sensors, filtering systems.
Materials: Fuels, solvents, abrasives, dyes.

*Tools and Equipment:* Basic diagnostic equipment, specialized diagnostic equipment, hand tools, power tools, specialized tools, maintenance manual.

**Sub-task**

**26.01 Troubleshoots fuel systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 26.01.01 | knowledge of fuel system specifications |
| 26.01.02 | knowledge of fuel system operation |
| 26.01.03 | knowledge of inspection and test procedures |
| 26.01.04 | ability to inspect and test fuel systems |
| 26.01.05 | ability to interpret test results |
| 26.01.06 | ability to identify damaged or worn parts |

**Sub-task**

**26.02 Disassembles fuel systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 26.02.01 | knowledge of disassembly procedures |
| 26.02.02 | knowledge of supporting systems |
| 26.02.03 | ability to interpret manufacturers specifications |
| 26.02.04 | ability to remove parts and components |

**Sub-task**

**26.03 Repairs fuel systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 26.03.01 | knowledge of repair procedures |
| 26.03.02 | knowledge of fuel system specifications |
| 26.03.03 | ability to identify damage and worn parts |
| 26.03.04 | ability to replace damaged and worn parts |

**Sub-task**

**26.04 Reassembles fuel systems.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 26.04.01 | knowledge of assembly procedures |
| 26.04.02 | knowledge of supporting systems |
| 26.04.03 | ability to interpret manufacturers recommendations |
| 26.04.04 | ability to assemble parts and components |

26.04.05 ability to test fuel system

**Sub-task**

**26.05 Rebuilds fuel system components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| no | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

26.05.01 knowledge of disassembly procedures

26.05.02 knowledge of rebuild procedures

26.05.03 knowledge of components

26.05.04 knowledge of supporting systems

26.05.05 ability to interpret manufacturers' specifications

26.05.06 ability to disassemble components

26.05.07 ability to test rebuild

**Task 27 Works on intake, exhaust and emission systems.**

*Related Components:* Manifolds, turbo, piping, pyrometer, muffler, catalytic converters, charge air cooler, air filter, restriction gauge, exhaust brake, sensors, gauges, rapid warm-up restriction valve, ether system, glow plugs, hardware.
Materials: Ether, sealants, solvents, abrasive, muffler cement, hardware, aluminum rod, shop supplies, soapy water.

*Tools and Equipment:* Hand tools, power tools, special diagnostic equipment, welder, specialized equipment.

**Sub-task**

**27.01 Troubleshoots intake, exhaust and emission systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 27.01.01 | knowledge of intake, exhaust, and emission systems and components operation |
| 27.01.02 | knowledge of supporting systems |
| 27.01.03 | knowledge of system specifications |
| 27.01.04 | knowledge of inspection and test procedures |
| 27.01.05 | ability to inspect and test systems |
| 27.01.06 | ability to interpret test results |
| 27.01.07 | ability to identify damaged and worn parts |

**Sub-task**

**27.02 Disassembles intake, exhaust and emission systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 27.02.01 | knowledge of disassembly procedures |
| 27.02.02 | knowledge of supporting systems |
| 27.02.03 | ability to interpret manufacturers□ specifications |
| 27.02.04 | ability to remove parts and components |

**Sub-task**

**27.03 Repairs intake, exhaust and emission systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 27.03.01 | knowledge of intake, exhaust and emission systems and components operation |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 27.03.02 | knowledge of systems specifications |
| 27.03.03 | knowledge of supporting systems |
| 27.03.04 | knowledge of repair procedures |
| 27.03.05 | ability to identify damaged and worn parts |
| 27.03.06 | ability to replace damaged and worn parts |

**Sub-task**

**27.04 Reassembles intake, exhaust and emission systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 27.04.01 | knowledge of assembly procedures |
| 27.04.02 | knowledge of supporting systems |
| 27.04.03 | ability to interpret manufacturers recommendations |
| 27.04.04 | ability to assemble parts and components |
| 27.04.05 | ability to test repairs |

**Sub-task**

**27.05 Rebuilds intake, exhaust and emission system components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 27.05.01 | knowledge of disassembly procedures |
| 27.05.02 | knowledge of rebuild procedures |

27.05.03 knowledge of components

**Supporting Knowledge & Abilities**

27.05.04 knowledge of supporting systems

27.05.05 ability to interpret manufacturers□ specifications

27.05.06 ability to disassemble components

27.05.07 ability to test rebuild

**Task 28 Works on auxiliary braking systems.**

*Related Components:* Retarder by combustion engine, retarders, exhaust-brake retarders. Materials: Solvents, soaps, fluids.

*Tools and Equipment:* Specialized diagnostic tools/equipment, lifting and supporting devices, hand tools, power tools, specialized equipment.

**Sub-task**

**28.01 Troubleshoots auxiliary braking systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | no | ND | NV |

28.01.01 knowledge of auxiliary braking systems and their components

28.01.02 knowledge of inspection and testing procedures

28.01.03 knowledge of supporting systems

28.01.04 ability to inspect and test auxiliary braking systems

28.01.05 ability to identify damaged and worn parts

**Sub-task**

**28.02 Disassembles auxiliary braking systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | no | ND | NV |

| | |
|---|---|
| 28.02.01 | knowledge of disassembly and assembly procedures |
| 28.02.02 | knowledge of auxiliary braking systems and their components |
| 28.02.03 | knowledge of supporting systems |
| 28.02.04 | ability to interpret manufacturers□ specifications |

**Sub-task**

**28.03 Repairs auxiliary braking systems components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | no | ND | NV |

| | |
|---|---|
| 28.03.01 | knowledge of adjustment procedures |
| 28.03.02 | knowledge of repair or replacement procedures |
| 28.03.03 | ability to identify damaged or worn parts |
| 28.03.04 | ability to remove and install components |
| 28.03.05 | ability to make adjustments |
| 28.03.06 | ability to test auxiliary braking systems |
| 28.03.07 | ability to interpret test results |

**Sub-task**

**28.04 Rebuilds auxiliary braking systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | no | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 28.04.01 | knowledge of types of brakes and braking systems |
| 28.04.02 | knowledge of rebuild procedures |
| 28.04.03 | ability to interpret manufacturers□ specifications |

## BLOCK G

## DRIVE TRAIN

*Trends:* *Better engineered to accommodate higher torque engines; less hazardous material (use of more organic materials); towards automatic shifting using electronic controls; use of synthetic oils; quieter; bigger and stronger; less maintenance; better serviceability; lighter and stronger components; longer life and warranties.*

**Task 29 Works on clutches.**

*Related Components:* Clutch disk(s) (organic and ceramic), fly wheel, pressure plate, shifting mechanisms, pilot bearing, clutch linkage, clutch brake, release bearing, hydraulic release system, intermediate plate, torque converter, cooler (air or coolant), gears, gauges, sensors, hardware, air regulator, lubricants and contaminants, flex plate, main shaft, synchronizers, shift covers, forks, etc.
Materials: Shop supplies.

*Tools and Equipment:* Air regulator, specialized diagnostic tools/equipment, hand tools, power tools, dial indicator, lifting and supporting devices, manual.

**Sub-task**

**29.01 Troubleshoots clutches.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

29.01.01 knowledge of clutches and components operation

29.01.02 knowledge of supporting systems

29.01.03 knowledge of inspection and testing procedures

29.01.04 ability to interpret manufacturers□ specifications

29.01.05 ability to inspect and test clutches and components

29.01.06 ability to interpret test results

29.01.07 ability to identify damaged and worn parts and components

**Sub-task**

**29.02 Removes clutches.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

29.02.01 knowledge of removal procedures

29.02.02 knowledge of disassembly procedures

29.02.03 knowledge of supporting systems

29.02.04 ability to interpret manufacturers□ specifications

29.02.05 ability to disassemble parts and components

**Sub-task**

**29.03 Repairs clutches.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 29.03.01 | knowledge of clutches and component specifications |
| 29.03.02 | knowledge of repair procedures |
| 29.03.03 | knowledge of inspection and test procedures |
| 29.03.04 | knowledge of supporting systems |
| 29.03.05 | ability to interpret test results |
| 29.03.06 | ability to identify damaged and worn parts |

**Sub-task**

**29.04 Installs clutches.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 29.04.01 | knowledge of assembly procedures |
| 29.04.02 | knowledge of installation procedures |
| 29.04.03 | knowledge of supporting systems |
| 29.04.04 | ability to interpret manufacturers recommendations |
| 29.04.05 | ability to assemble parts and components |
| 29.04.06 | ability to test clutches |

**Sub-task**

**29.05 Rebuilds clutch components.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 29.05.01 | knowledge of disassembly procedures |
| 29.05.02 | knowledge of rebuild procedures |
| 29.05.03 | knowledge of components |
| 29.05.04 | knowledge of supporting systems |
| 29.05.05 | ability to interpret manufacturers□ specifications |
| 29.05.06 | ability to disassemble components |
| 29.05.07 | ability to test rebuild |

**Task 30 Works on standard transmissions.**

*Related Components:* Clutch disk(s) (organic and ceramic), fly wheel, pressure plate, shifting mechanisms, pilot bearing, clutch linkage, clutch brake, release bearing, hydraulic release system, intermediate plate, torque converter, cooler (air or coolant), gears, gauges, sensors, hardware, air regulator, lubricants and contaminants, flex plate, main shaft, synchronizers, shift covers, forks, etc.
Materials: Shop supplies.

*Tools and Equipment:* Air regulator, specialized diagnostic tools/equipment, hand tools, power tools, dial indicator, lifting and supporting devices, manual.

**Sub-task**

**30.01 Troubleshoots standard transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 30.01.01 | knowledge of standard transmissions and components operation |
| 30.01.02 | knowledge of supporting systems |

30.01.03 knowledge of inspection and testing procedures

**Supporting Knowledge & Abilities**

30.01.04 ability to interpret manufacturers□ specifications

30.01.05 ability to inspect and test standard transmissions and components

30.01.06 ability to interpret test results

30.01.07 ability to identify damaged and worn parts and components

**Sub-task**

**30.02 Removes standard transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

30.02.01 knowledge of removal procedures

30.02.02 knowledge of disassembly procedures

30.02.03 knowledge of supporting systems

30.02.04 ability to interpret manufacturers□ specifications

30.02.05 ability to disassemble parts and components

**Sub-task**

**30.03 Repairs standard transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

30.03.01 knowledge of standard transmissions and components specifications

30.03.02 knowledge of repair procedures

30.03.03 knowledge of inspection and test procedures

**Supporting Knowledge & Abilities**

30.03.04 knowledge of supporting systems

30.03.05 ability to interpret test results

30.03.06 ability to identify damaged and worn parts

**Sub-task**

**30.04 Installs standard transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

30.04.01 knowledge of assembly procedures

30.04.02 knowledge of installation procedures

30.04.03 knowledge of supporting systems

30.04.04 ability to interpret manufacturers' recommendations

30.04.05 ability to assemble parts and components

30.04.06 ability to test standard transmissions

**Sub-task**

**30.05 Rebuilds standard transmission components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

30.05.01 knowledge of disassembly procedures

30.05.02 knowledge of rebuild procedures

30.05.03 knowledge of components

30.05.04 knowledge of supporting systems

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 30.05.05 | ability to interpret manufacturers' specifications |
| 30.05.06 | ability to disassemble components |
| 30.05.07 | ability to test rebuild |

**Task 31 Works on automatic transmissions.**

*Related Components:* Gears, gauges, sensors, hardware, lubricants and contaminants, flex plate, main shaft, converter, valve body retarders, oil coolers, range selector, electronic control module (ECM), solenoids and road speed governors.
Materials: Shop supplies.

*Tools and Equipment:* Air regulator, specialized diagnostic tools/equipment, hand tools, power tools, dial indicator, lifting and supporting devices, manual.

**Sub-task**

**31.01 Troubleshoots automatic transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 31.01.01 | knowledge of automatic transmissions and components operation |
| 31.01.02 | knowledge of supporting systems |
| 31.01.03 | knowledge of inspection and testing procedures |
| 31.01.04 | ability to interpret manufacturers' specifications |
| 31.01.05 | ability to inspect and test automatic transmissions and components |
| 31.01.06 | ability to interpret test results |
| 31.01.07 | ability to identify damaged and worn parts and components |

**Sub-task**

**31.02 Removes automatic transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 31.02.01 | knowledge of removal procedures |
| 31.02.02 | knowledge of disassembly procedures |
| 31.02.03 | knowledge of supporting systems |
| 31.02.04 | ability to interpret manufacturers□ specifications |
| 31.02.05 | ability to disassemble parts and components |

**Sub-task**

**31.03 Repairs automatic transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 31.03.01 | knowledge of automatic transmissions and components specifications |
| 31.03.02 | knowledge of repair procedures |
| 31.03.03 | knowledge of inspection and test procedures |
| 31.03.04 | knowledge of supporting systems |
| 31.03.05 | ability to interpret test results |
| 31.03.06 | ability to identify damaged and worn parts |

**Sub-task**

**31.04 Installs automatic transmissions.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 31.04.01 | knowledge of assembly procedures |
| 31.04.02 | knowledge of manufacturers recommendations |
| 31.04.03 | knowledge of installation procedures |
| 31.04.04 | knowledge of supporting systems |
| 31.04.05 | ability to assemble parts and components |
| 31.04.06 | ability to test automatic transmissions |

**Sub-task**

**31.05 Rebuilds automatic transmission components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 31.05.01 | knowledge of disassembly procedures |
| 31.05.02 | knowledge of rebuild procedures |
| 31.05.03 | knowledge of components |
| 31.05.04 | knowledge of supporting systems |
| 31.05.05 | ability to interpret manufacturers specifications |
| 31.05.06 | ability to disassemble components |
| 31.05.07 | ability to test rebuild |

**Task 32** **Works on drive lines.**

*Related Components:* U-joints, yokes, center bearings, shafts, hardware, braking system (vehicle retarder).
Materials: Hardware, shop supplies.

*Tools and Equipment:* Magnetic protractor, hand tools, power tools, lifting and supporting devices, heat gun, specialized tools.

**Sub-task**

**32.01 Troubleshoots drive lines.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 32.01.01 | knowledge of drive line operation |
| 32.01.02 | knowledge of inspection and test procedures |
| 32.01.03 | knowledge of supporting systems |
| 32.01.04 | ability to interpret manufacturers□ specifications |
| 32.01.05 | ability to inspect and test drive line lines |
| 32.01.06 | ability to interpret test results |
| 32.01.07 | ability to identify damage and worn parts and components |

**Sub-task** -

**32.02 Removes drive lines.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 32.02.01 | knowledge of removal procedures |
| 32.02.02 | knowledge of disassembly procedures |
| 32.02.03 | knowledge of supporting systems |
| 32.02.04 | ability to interpret manufacturers□ specifications |
| 32.02.05 | ability to disassemble parts and components |

**Sub-task**

**32.03 Repairs drive lines.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 32.03.01 | knowledge of repair procedures |
| 32.03.02 | knowledge of drive line specifications |
| 32.03.03 | ability to identify damaged and worn parts |
| 32.03.04 | ability to replace damaged and worn parts |

**Sub-task**

**32.04 Installs drive lines.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 32.04.01 | knowledge of assembly procedures |
| 32.04.02 | knowledge of installation procedures |
| 32.04.03 | knowledge of supporting systems |
| 32.04.04 | ability to interpret manufacturers recommendations |
| 32.04.05 | ability to assemble parts and components |
| 32.04.06 | ability to test drive lines |

**Task 33 Works on differentials and transfer cases.**

*Related Components:* Power divider, differential lock-up, locking device, axles, attaching hardware, 2-speed motor, shifting device, shift fork, lubricants and contaminants, filter, vent, seals, yoke.
Materials: Cleaning agents, grease marker, sealants, blueing, lock wire.

*Tools and Equipment:* Heat gun, pressure regulator, specialized tools, lifting and supporting devices, hand tools, abrasive materials, dial indicator, power tools, torque wrench, spring scale, string.

**Sub-task**

**33.01 Troubleshoots differentials and transfer cases.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 33.01.01 | knowledge of differentials, transfer cases and components operation |
| 33.01.02 | knowledge of inspection and test procedures |
| 33.01.03 | ability to interpret manufacturers□ specifications |
| 33.01.04 | ability to inspect and test differentials and transfer cases |
| 33.01.05 | ability to interpret test results |
| 33.01.06 | ability to identify damaged and worn parts |

**Sub-task**

**33.02 Removes differentials and transfer cases.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 33.02.01 | knowledge of removal procedures |
| 33.02.02 | knowledge of disassembly procedures |
| 33.02.03 | knowledge of supporting systems |
| 33.02.04 | ability to interpret manufacturers□ specifications |
| 33.02.05 | ability to disassemble parts and components |

**Sub-task**

**33.03 Repairs differentials and transfer cases.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 33.03.01 | knowledge of differentials, transfer cases and components specifications |
| 33.03.02 | knowledge of supporting systems |
| 33.03.03 | knowledge of repair procedures |
| 33.03.04 | ability to identify damaged and worn parts |
| 33.03.05 | ability to replace damaged and worn parts |

**Sub-task**

**33.04 Installs differentials and transfer cases.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 33.04.01 | knowledge of assembly procedures |
| 33.04.02 | knowledge of installation procedures |
| 33.04.03 | knowledge of supporting systems |
| 33.04.04 | ability to interpret manufacturers recommendations |
| 33.04.05 | ability to assemble parts and components |
| 33.04.06 | ability to test differentials and transfer cases |

**Sub-task**

**33.05 Rebuilds differential and transfer case components.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 33.05.01 | knowledge of disassembly procedures |
| 33.05.02 | knowledge of rebuild procedures |
| 33.05.03 | knowledge of components |
| 33.05.04 | knowledge of supporting systems |
| 33.05.05 | ability to interpret manufacturers□ specifications |
| 33.05.06 | ability to disassemble components |
| 33.05.07 | ability to test rebuild |

## BLOCK H

## ACCESSORIES

*Trends:* *More user friendly; more monitoring systems, more compact; aimed at operator/driver convenience; more difficult to install; more electronic controls; faster response time, increase in maintenance intervals; quieter components.*

**Task 34** **Works on accessories.**

*Related Components:* Electrical accessories (eg. converter), pneumatic (eg. PTO control), hydraulic (eg. tailgate).
Materials: Shop supplies, hardware, fluids, gases, lubricants.

*Tools and Equipment:* Specialty tools, gauges, welder (equipment), hand tools, power tools.

**Sub-task**

**34.01 Troubleshoots accessories.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 34.01.01 | knowledge of accessories and components operation |
| 34.01.02 | knowledge of supporting systems |
| 34.01.03 | ability to interpret manufacturers□ specifications |
| 34.01.04 | ability to inspect and test accessories |
| 34.01.05 | ability to interpret test results |
| 34.01.06 | ability to identify damaged and worn parts |

**Sub-task**

**34.02 Removes accessories.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

| | |
|---|---|
| 34.02.01 | knowledge of removal procedures |
| 34.02.02 | knowledge of disassembly procedures |
| 34.02.03 | knowledge of supporting systems |
| 34.02.04 | ability to interpret manufacturers□ specifications |
| 34.02.05 | ability to disassemble parts and components |

**Sub-task**

**34.03 Repairs accessories.** **Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

34.03.01 knowledge of repair procedures

34.03.02 ability to interpret manufacturers□ specifications

34.03.03 ability to identify damaged and worn parts

34.03.04 ability to replace damaged and worn parts

**Sub-task**

**34.04 Installs accessories.**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

34.04.01 knowledge of assembly procedures

34.04.02 knowledge of installation procedures

34.04.03 knowledge of supporting systems

34.04.04 knowledge of accessory operation

34.04.05 ability to assemble accessories and hardware

34.04.06 ability to test accessories

**Sub-task**

**34.05 Rebuilds accessory components.**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | yes | yes | yes | yes | yes | yes | ND | NV |

**Supporting Knowledge & Abilities**

34.05.01 knowledge of disassembly procedures

34.05.02 knowledge of rebuild procedures

34.05.03 knowledge of components

34.05.04 knowledge of supporting systems

**Supporting Knowledge & Abilities**

34.05.05 ability to interpret manufacturers[] specifications

34.05.06 ability to disassemble components

34.05.07 ability to test rebuild

**Task 35 Works on hydraulic systems.**

*Related Components:* Pumps, cylinders, hoses, valves, drives, hydraulic motors, reservoirs, coolers, filters, couplers, gauges, accumulators, drive shafts, PTO (Power Take Offs), controls, sensors.
Materials: Solvents, sealants, abrasive, shims, hardware, lubricants, gasket materials.

*Tools and Equipment:* Filters, hand tools, specialized equipment, power tools, lifting and supporting devices.

**Sub-task**

**35.01 Troubleshoots hydraulic systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

35.01.01 knowledge of hydraulic systems and components operation

35.01.02 knowledge of supporting systems

35.01.03 ability to interpret manufacturers[] specifications

35.01.04 ability to inspect and test hydraulic systems

35.01.05 ability to interpret test results

35.01.06 ability to identify damage or worn parts

**Sub-task**

**35.02 Disassembles hydraulic systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

35.02.01 knowledge of disassembly procedures

35.02.02 knowledge of supporting systems

35.02.03 ability to interpret manufacturers specifications

35.02.04 ability to remove parts and components

**Sub-task**

**35.03 Repairs hydraulic systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

35.03.01 knowledge of repair procedures

35.03.02 knowledge of hydraulic system specifications

35.03.03 ability to identify damaged and worn parts

35.03.04 ability to replace damaged parts

**Sub-task**

**35.04 Installs hydraulic systems.**

**Supporting Knowledge & Abilities**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| yes | yes | yes | yes | no | yes | yes | yes | yes | yes | ND | NV |

35.04.01 knowledge of assembly procedures

35.04.02 knowledge of installation procedures

35.04.03 knowledge of supporting systems

**Supporting Knowledge & Abilities**

| | |
|---|---|
| 35.04.04 | ability to interpret manufacturers□ recommendations |
| 35.04.05 | ability to assemble parts and components |
| 35.04.06 | ability to test repairs |

# APPENDICES

# TOOLS AND EQUIPMENT

## Shop Supplies

A/C nitrogen
A/C o-rings/oil
A/C supplies - insulation tape for
air gun oils
air line couplings
clevis pin
cotter pins
coveralls
cut off saw wheels
die grinders
drills @ to □ inch
dust masks
ear plugs
emery paper
extra bulk solvents
face shields
files
flashlight batteries
flashlight bulbs
floor mats (paper)
fuel for filters
grease
grinding stones
grinding wheels
grommets
hacksaw blades
lacquer cleaner
lock wire
machine screws and nuts
machinery bits and equipment
metals
MIG weld - gas
nuts, washer, bolts
o-rings
office supplies
paint thinners
R.O. paper
rags/cloth
razor blades
ready rod
safety glasses
sanding machine papers
sanding wheels
sandpaper
scotch brite pads
scotch brite wheels
seat covers
sheet metal screws
solvent cleaner sental
solvents
special adhesives
speed nuts
stainless bolts
star washers
steam cleaner soap
tapes (electrical, masking, duct, 2-way)
taps and dyes
time tickets
tire valves
trouble light bulbs
truckwash soap
valve covers
welding protective gear
welding rods (arc)
welding rods (gas)
wire wheel (for die grinder)
wire wheel rolls for metal and
wire wheels (large)
yellow paint for shop floor

### Hand Tools

feeler gauges
files
filter wrenches
hammers
lighting devices
magnets
magnifying glass
mirrors
pick set
pry bars
punches and chisels
saws
screwdrivers
sockets and ratchets
wrenches

### Power Tools

air hammers
air wrench
drills
sanders
saw
torque wrench

### Safety Equipment

exhaust ventilation
fall protection system
fire blanket
fire extinguisher
guard rails
welding shields

### Personal Protective Equipment

aprons
boots
ear protection
gloves
goggles/shields
hard hats
masks
welding helmets

### Lifting/Supporting Equipment

axle stands
blocking
cranes
hoists
jacks
ladders
stands

## Staging Equipment

ladders
scaffolding
steps
stools

## Hardware

bolts
brackets
clamps
clips
connectors
fasteners
grommets
heat shrink
nuts
pins
rivets
screws
shim stock
terminals
tie straps
washers

## Specialized Equipment

As indicated in Original Equipment Manufacturers manuals.

## Measuring Tools, Gauges and Equipment

ammeter
antifreeze tester
boost gauge
calipers
circuit tester
compression gauges
continuity tester
dial indicators
dwell-meter
dynamometer
exhaust analyzer
feeler gauge
hydrometer
micrometer
ohmmeter
pressure gauges
rules
spark plug tester
squares
straight edge
tachometers
telescopic gauge
temperature gauge
timing light
tire gauge
trammel gauge
vacuum gauge
verniers

# GLOSSARY

In preparing this analysis the "what" and "how" have been consolidated in many instances to shorten the length of the analysis and reduce the number of references to other parts of the analysis. When these terms are used, therefore, they imply that certain actions are required to be performed by the worker. To clarify the meaning of each term, a definition within the context of the analysis is provided in the following Glossary. The reader may assume that encountering these terms in the text indicates performance by the tradesperson.

| | |
|---|---|
| **adjusts** | this normally involves items such as brakes, steering controls and does not usually involve dismantling the component involved. This procedure requires a knowledge of special procedures and the use of special tools and equipment. |
| **aligns** | this usually involves parts of the equipment such as wheels, gear strains, lights and lighting equipment. It does not necessarily involve taking the equipment apart, although there are some instances when this action is necessary. It does involve also, the use of special testing equipment and the use of hand or power tools to loosen and fasten nuts, bolts, clamps, straps and hangers. |
| **installs (assembles)** | this involves the mechanical actions necessary to install engines, components, ancillary equipment and attachments. This implies that the mechanic is acquainted with the use of hand tools, power tools and power equipment such as jacks and hoists. It invariably involves a knowledge of the inter-relationship of components to a main piece of equipment and the steps necessary to protect clamps, lines, linkages when such a procedure is necessary. |
| **inspects** | this is normally a visual inspection carried out after the main equipment or component has been cleaned and/or disassembles. It is then inspected for excessive wear or damage and a decision is made as to what further action is to be taken. Examples of inspection procedures would be measuring spark plug gaps using feeler gauges; measuring bearings using micrometers and measuring the inside of cylinder chambers using micrometers and dial gauges. |
| **manufacturers specifications** | this term includes manufacturers, instruction, performance standards for engines, ancillary equipment and component parts, engineering specifications such as dimensions of parts, clearances, etc. usually outlined in parts and services manuals, and bulletins. |
| **modifies** | involves allowable/recommended modifications. The mechanic refers to manufacturers specifications and may require special tools and equipment. |
| **reassembles** | this action is an integral part of the actions which necessitates that en engine, engine component, ancillary equipment and their components be taken apart. It involves putting the equipment back together and the same tools are used which initially took it apart. |

| | |
|---|---|
| **rebuilds** | this is a highly specialized function performed as a rule only in very large establishments. By its very concept, it involves other actions such as TESTING and REMOVING. It also involves the use of a wide spectrum of tools and power equipment such as machine lathes, drill presses, power-actuated socket wrenches, tapping and dieing tools, boring equipment and precision measuring instruments such as feeler gauges, inside and outside calipers, micrometers, dial gauges and finely calibrated rulers. |
| **rekits** | essentially this involves replacing parts of a carburetor or diesel injection valve. This is a specialized function within the scope of the competency of the mechanic. It also involves the use of specialized precision hand tools which require careful and deliberate movements. |
| **removes (disassembles)** | this involves the mechanical actions necessary to remove an engine from its chamber and housing; components from an engine without removing the whole engine; removing ancillary equipment and attachments. This implies that the mechanic is acquainted with the use of hand tools, power tools and power equipment such as jacks and hoists. It invariably involves a knowledge of the inter-relationship of components to a main piece of equipment and the steps necessary to protect clamps, lines, linkages when such a procedure is necessary. |
| **repairs** | this involves fixing, mending, or restoring the worn or damaged parts of an engine, ancillary equipment and their component. Repair involves actually performing some action with these parts or the main equipment by performing machining operations such as grinding valves, honing brake drums and using machine lathes. It also involves using a wide range of tools such as screwdrivers, hammers, wrenches, power wrenches, brazing and soldering equipment, welding equipment, torque wrenches, pliers and files. |
| **replaces** | simply the one-for-one replacement of a part or component (modular concept) and requires a knowledge of the relation the replacement part has to the equipment as a whole. It is a function that can be carried out in a location other than a workshop and involves the use of tools as outlined in REPAIR. For the purpose of this analysis the phrases as required, when necessary, etc., have been omitted. It is understood that when the word REPLACES is used singly or in sequence that parts or components are replaced only when necessary or required. |
| **tests** | this embraces a number of diagnostic and testing procedures ranging from simple running tests to complicated and lengthy tests using highly specialized and sophisticated equipment applicable to a particular vehicle, engine or component. Examples of diagnoses and tests are simple run-in tests and listening to the sound of a motor; testing injector valves from diesel engines by manually operating the injector cylinder to observe the scatter pattern of the fuel; testing the integrity of lines, hoses and connections by conducting complicated bench running tests using a dynamometer and instruments to record temperature and speeds. |

# BLOCKS AND TASKS WEIGHTING

## BLOCK A OCCUPATIONAL SKILLS

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 8 | 5 | 5 | 3 | 12 | 3 | 5 | 2 | 5 | 7 | ND | NV | 6% |

Task 1 Completes maintenance records and documents.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 15 | 20 | 10 | 23 | 15 | 0 | 5 | 16 | 25 | 15 | ND | NV | 15% |

Task 2 Operates and maintains tools and equipment.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 23 | 25 | 40 | 18 | 20 | 33 | 30 | 24 | 25 | 15 | ND | NV | 25% |

Task 3 Inspects and cleans vehicle components.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 20 | 15 | 10 | 18 | 25 | 33 | 35 | 13 | 15 | 25 | ND | NV | 21% |

Task 4 Conducts road tests.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 10 | 15 | 20 | 17 | 20 | 0 | 15 | 34 | 25 | 15 | ND | NV | 17% |

Task 5 Maintains vehicle.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 32 | 25 | 20 | 24 | 20 | 34 | 15 | 13 | 10 | 30 | ND | NV | 22% |

## BLOCK B CHASSIS AND FRAMES

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 8 | 10 | 15 | 8 | 10 | 10 | 10 | 10 | 10 | 8 | ND | NV | 10% |

Task 6 Modifies length and height of frames.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 17 | 25 | 20 | 25 | 20 | 20 | 15 | 10 | 25 | 35 | ND | NV | 21% |

Task 7 Works on suspensions.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 52 | 50 | 50 | 46 | 60 | 50 | 60 | 80 | 50 | 45 | ND | NV | 54% |

Task 8 Works on hitches and couplers.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 31 | 25 | 30 | 29 | 20 | 30 | 25 | 10 | 25 | 20 | ND | NV | 25% |

**BLOCK C AIR SYSTEMS, BRAKES AND STEERING**

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 20 | 18 | 20 | 19 | 20 | 22 | 25 | 20 | 20 | 20 | ND | NV | 20% |

Task 9 Works on air systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 24 | 24 | 20 | 28 | 15 | 27 | 30 | 30 | 30 | 30 | ND | NV | 26% |

Task 10 Works on braking systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 30 | 30 | 40 | 25 | 40 | 32 | 30 | 30 | 30 | 20 | ND | NV | 31% |

Task 11 Works on steering systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 28 | 26 | 20 | 26 | 35 | 27 | 20 | 30 | 30 | 30 | ND | NV | 27% |

Task 12 Works on tires, wheels, rims and hubs.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 18 | 20 | 20 | 21 | 10 | 14 | 20 | 10 | 10 | 20 | ND | NV | 16% |

**BLOCK D ELECTRICAL AND ELECTRONIC SYSTEMS**

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 17 | 19 | 20 | 25 | 15 | 20 | 10 | 25 | 20 | 15 | ND | NV | 18% |

Task 13 Works on electrical systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 13 | 24 | 20 | 15 | 25 | 10 | 10 | 20 | 15 | 10 | ND | NV | 16% |

Task 14 Works on charging systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 18 | 13 | 20 | 16 | 20 | 15 | 20 | 20 | 15 | 15 | ND | NV | 17% |

Task 15 Works on starting systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 18 | 12 | 20 | 16 | 15 | 15 | 20 | 20 | 5 | 15 | ND | NV | 16% |

Task 16 Works on ignition systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 10 | 11 | 10 | 13 | 0 | 5 | 10 | 0 | 5 | 10 | ND | NV | 7% |

Task 17 Works on electrical conductors and connectors.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 13 | 10 | 5 | 11 | 20 | 10 | 5 | 10 | 20 | 10 | ND | NV | 12% |

Task 18 Works on electronic components.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 16 | 18 | 20 | 16 | 5 | 30 | 15 | 20 | 20 | 20 | ND | NV | 18% |

Task 19 Works on electrical and electronic accessories.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 12 | 12 | 5 | 13 | 15 | 15 | 20 | 10 | 20 | 20 | ND | NV | 14% |

**BLOCK E CAB AND BODY**

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 2 | 9 | 5 | 8 | 1 | 10 | 10 | 10 | 10 | 8 | ND | NV | 7% |

Task 20 Works on HVAC (Heating, Ventilation, Air Conditioning) and refrigeration systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 71 | 50 | 50 | 45 | 60 | 50 | 80 | 95 | 50 | 50 | ND | NV | 60% |

Task 21 Works on trailer bodies.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 29 | 25 | 20 | 28 | 35 | 30 | 10 | 0 | 25 | 25 | ND | NV | 23% |

Task 22 Works on cab body and trim.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 0 | 25 | 30 | 27 | 5 | 20 | 10 | 5 | 25 | 25 | ND | NV | 17% |

**BLOCK F ENGINE AND SUPPORTING SYSTEMS**

| NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 19 | 18 | 15 | 19 | 20 | 16 | 15 | 15 | 20 | 20 | ND | NV | 18% |

Task 23 Works on engines.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 27 | 32 | 20 | 24 | 30 | 25 | 35 | 45 | 35 | 25 | ND | NV | 30% |

Task 24 Works on cooling systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 18 | 16 | 20 | 18 | 20 | 6 | 20 | 13 | 15 | 15 | ND | NV | 16% |

Task 25 Works on lubrication systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 15 | 13 | 10 | 12 | 10 | 6 | 10 | 10 | 10 | 15 | ND | NV | 11% |

Task 26 Works on fuel systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 20 | 18 | 25 | 20 | 15 | 25 | 20 | 15 | 20 | 25 | ND | NV | 20% |

Task 27 Works on intake, exhaust and emission systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 14 | 17 | 23 | 15 | 20 | 32 | 10 | 8 | 10 | 20 | ND | NV | 17% |

Task 28 Works on auxiliary braking systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 6 | 4 | 2 | 11 | 5 | 6 | 5 | 9 | 10 | 0 | ND | NV | 6% |

**BLOCK G DRIVE TRAIN**

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 21 | 13 | 15 | 10 | 20 | 15 | 15 | 15 | 10 | 15 | ND | NV | 15% |

Task 29 Works on clutches.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 7 | 25 | 25 | 21 | 8 | 13 | 10 | 11 | 10 | 15 | ND | NV | 15% |

Task 30 Works on standard transmissions.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 13 | 17 | 20 | 25 | 12 | 33 | 20 | 21 | 15 | 15 | ND | NV | 19% |

Task 31 Works on automatic transmissions.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 17 | 3 | 5 | 19 | 20 | 13 | 20 | 18 | 15 | 15 | ND | NV | 15% |

Task 32 Works on drive lines.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 32 | 21 | 10 | 15 | 40 | 20 | 15 | 15 | 20 | 20 | ND | NV | 21% |

Task 33 Works on differentials and transfer cases.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 31 | 34 | 40 | 20 | 20 | 21 | 35 | 35 | 40 | 35 | ND | NV | 30% |

**BLOCK H ACCESSORIES**

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | National Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 5 | 8 | 5 | 8 | 2 | 4 | 10 | 3 | 5 | 7 | ND | NV | 6% |

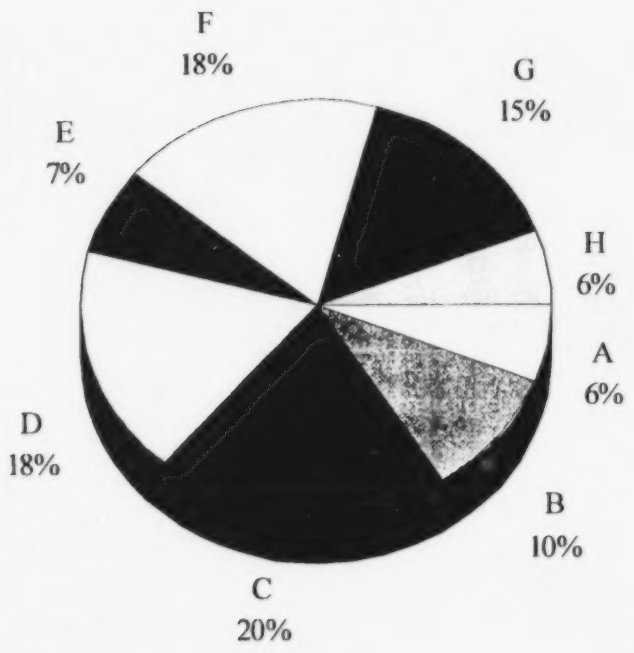
Task 34 Works on accessories.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 52 | 49 | 50 | 50 | 100 | 25 | 30 | 65 | 50 | 35 | ND | NV | 51% |

Task 35 Works on hydraulic systems.

| | NF | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 48 | 51 | 50 | 50 | 0 | 75 | 70 | 35 | 50 | 65 | ND | NV | 49% |

## PIE CHART*
**Truck and Transport Mechanic**




### TITLES OF BLOCKS

| | | | |
|---|---|---|---|
| Block A | Occupational Skills | Block E | Cab and Body |
| Block B | Chassis and Frames | Block F | Engine and Supporting Systems |
| Block C | Air Systems, Brakes and Steering | Block G | Drive Train |
| Block D | Electrical and Electronic Systems | Block H | Accessories |

- The average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from one hundred up to one hundred and fifty multiple choice questions on each examinations.

## TRUCK AND TRANSPORT MECHANIC (2000)

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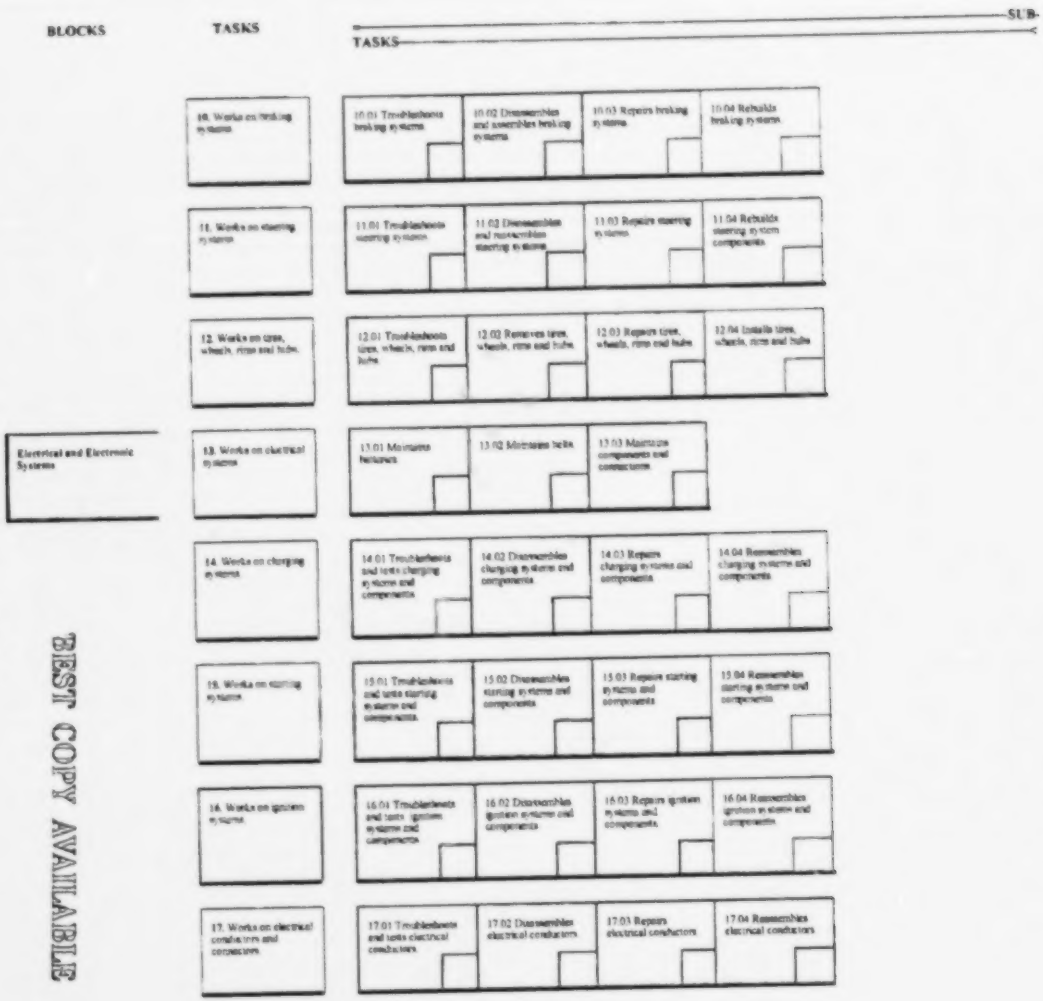
| BLOCKS | TASKS | SUB-TASKS |
|---|---|---|
| A Occupational Skills | 1. Completes maintenance records and documents. | 1.01 Documents work performed<br>1.02 Completes maintenance schedules and checklists<br>1.03 Records road test result<br>1.04 Records inspection results |
| | 2. Operates and maintains tools and equipment. | 2.01 Uses general hand tools.<br>2.02 Operates power tools<br>2.03 Operates/uses measuring devices<br>2.04 Operates lifting and supporting equipment.<br>2.05 Sets up and operates diagnostic and testing equipment.<br>2.06 Sets up and operates staging equipment. |
| | 3. Inspects and cleans vehicle components. | 3.01 Inspects vehicle operating systems and related components<br>3.02 Cleans vehicle components for inspection purposes<br>3.03 Interprets inspection results |
| | 4. Conducts road tests. | 4.01 Determines type of road test required<br>4.02 Selects road test diagnostic equipment.<br>4.03 Hooks-up road test diagnostic equipment.<br>4.04 Drives vehicle.<br>4.05 Interprets road test results. |
| | 5. Maintains vehicle. | 5.01 Replenishes fluids<br>5.02 Replaces filters.<br>5.03 Lubricates assemblies and components.<br>5.04 Consults required documentation. |
| B Chassis and Frames | 6. Modifies length and height of frames | 6.01 Cuts frames<br>6.02 Drills frames<br>6.03 Welds frames and components<br>6.04 Replaces components |
| | 7. Works on suspensions | 7.01 Repairs suspensions<br>7.02 Modifies suspensions<br>7.03 Rebuilds suspensions |
| | 8. Works on hitches and couplers | 8.01 Troubleshoots hitches and couplers<br>8.02 Removes hitches and couplers<br>8.03 Repairs hitches and couplers<br>8.04 Installs hitches and couplers |
| C Air Systems, Brakes and Steering/Gear Systems (as defined) | 9. Works on air systems | 9.01 Troubleshoots air systems<br>9.02 Disassembles air systems<br>9.03 Repairs air systems<br>9.04 Rebuilds air systems<br>9.05 Installs air systems |


BLOCKS
TASKS
SUB-TASKS
10. Works on braking systems
10.01 Troubleshoots braking systems
10.02 Disassembles and assembles braking systems
10.03 Repairs braking systems
10.04 Rebuilds braking systems
11. Works on steering systems
11.01 Troubleshoots steering systems
11.02 Disassembles and reassembles steering systems
11.03 Repairs steering systems
11.04 Rebuilds steering system components
12. Works on tires, wheels, rims and hubs
12.01 Troubleshoots tires, wheels, rims and hubs
12.02 Removes tires, wheels, rims and hubs
12.03 Repairs tires, wheels, rims and hubs
12.04 Installs tires, wheels, rims and hubs
D
Electrical and Electronic Systems
13. Works on electrical systems
13.01 Maintains batteries
13.02 Maintains belts
13.03 Maintains components and connections
14. Works on charging systems
14.01 Troubleshoots and tests charging systems and components
14.02 Disassembles charging systems and components
14.03 Repairs charging systems and components
14.04 Reassembles charging systems and components
15. Works on starting systems
15.01 Troubleshoots and tests starting systems and components
15.02 Disassembles starting systems and components
15.03 Repairs starting systems and components
15.04 Reassembles starting systems and components
16. Works on ignition systems
16.01 Troubleshoots and tests ignition systems and components
16.02 Disassembles ignition systems and components
16.03 Repairs ignition systems and components
16.04 Reassembles ignition systems and components
17. Works on electrical conductors and connectors
17.01 Troubleshoots and tests electrical conductors
17.02 Disassembles electrical conductors
17.03 Repairs electrical conductors
17.04 Reassembles electrical conductors

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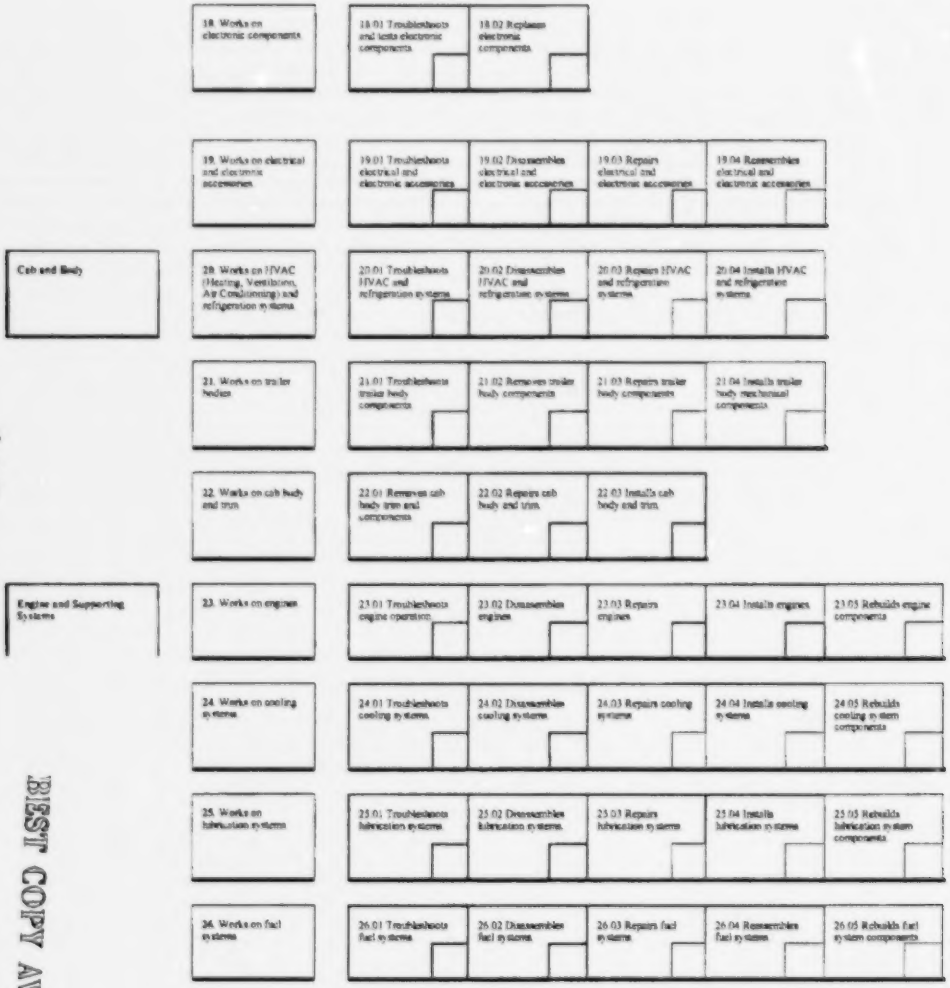
18. Works on electronic components
18.01 Troubleshoots and tests electronic components
18.02 Replaces electronic components
19. Works on electrical and electronic accessories
19.01 Troubleshoots electrical and electronic accessories
19.02 Disassembles electrical and electronic accessories
19.03 Repairs electrical and electronic accessories
19.04 Reassembles electrical and electronic accessories
E
Cab and Body
20. Works on HVAC (Heating, Ventilation, Air Conditioning) and refrigeration systems
20.01 Troubleshoots HVAC and refrigeration systems
20.02 Disassembles HVAC and refrigeration systems
20.03 Repairs HVAC and refrigeration systems
20.04 Installs HVAC and refrigeration systems
21. Works on trailer bodies
21.01 Troubleshoots trailer body components
21.02 Removes trailer body components
21.03 Repairs trailer body components
21.04 Installs trailer body mechanical components
22. Works on cab body and trim
22.01 Removes cab body trim and components
22.02 Repairs cab body and trim
22.03 Installs cab body and trim
F
Engine and Supporting Systems
23. Works on engines
23.01 Troubleshoots engine operation
23.02 Disassembles engines
23.03 Repairs engines
23.04 Installs engines
23.05 Rebuilds engine components
24. Works on cooling systems
24.01 Troubleshoots cooling systems
24.02 Disassembles cooling systems
24.03 Repairs cooling systems
24.04 Installs cooling systems
24.05 Rebuilds cooling system components
25. Works on fabrication systems
25.01 Troubleshoots fabrication systems
25.02 Disassembles fabrication systems
25.03 Repairs fabrication systems
25.04 Installs fabrication systems
25.05 Rebuilds fabrication system components
26. Works on fuel systems
26.01 Troubleshoots fuel systems
26.02 Disassembles fuel systems
26.03 Repairs fuel systems
26.04 Reassembles fuel systems
26.05 Rebuilds fuel system components

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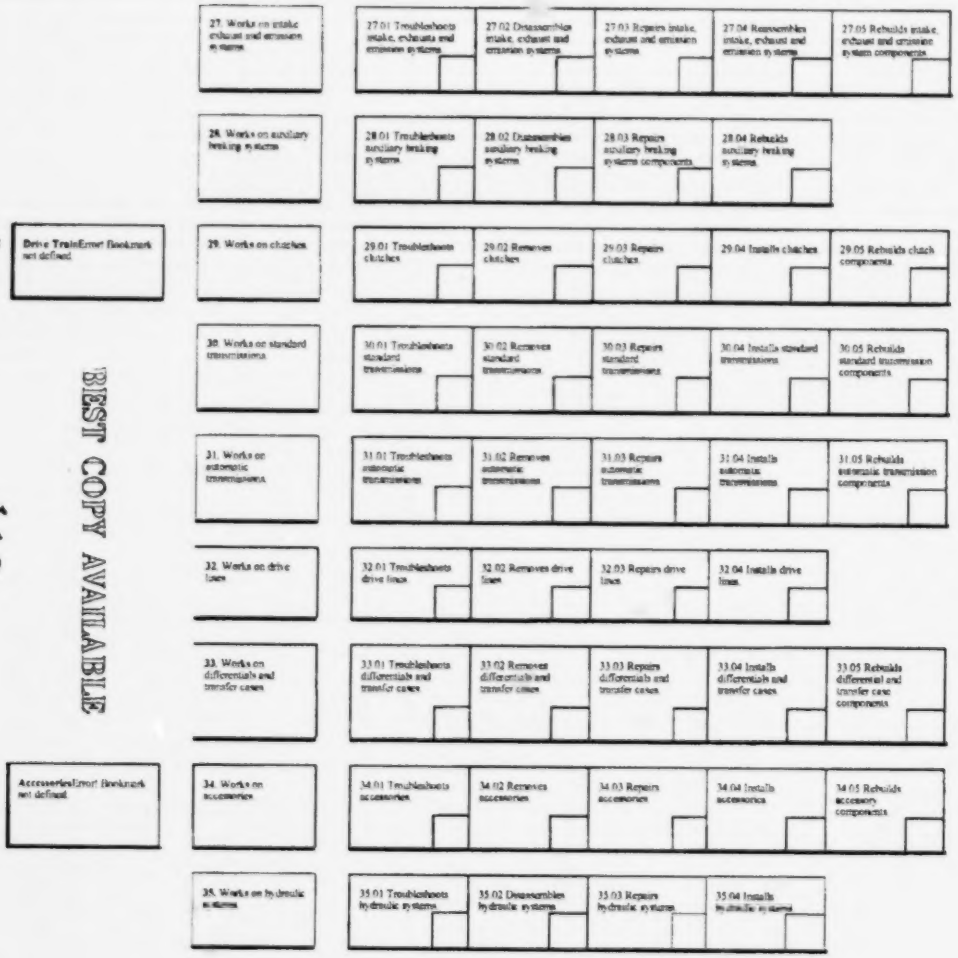
27. Works on intake exhaust and emission systems
27.01 Troubleshoots intake, exhausts and emission systems
27.02 Disassembles intake, exhaust and emission systems
27.03 Repairs intake, exhaust and emission systems
27.04 Reassembles intake, exhaust and emission systems
27.05 Rebuilds intake, exhaust and emission system components
28. Works on auxiliary braking systems
28.01 Troubleshoots auxiliary braking systems
28.02 Disassembles auxiliary braking systems
28.03 Repairs auxiliary braking systems components
28.04 Rebuilds auxiliary braking systems
C
Drive TrainError! Bookmark not defined.
29. Works on clutches
29.01 Troubleshoots clutches
29.02 Removes clutches
29.03 Repairs clutches
29.04 Installs clutches
29.05 Rebuilds clutch components
30. Works on standard transmissions
30.01 Troubleshoots standard transmissions
30.02 Removes standard transmissions
30.03 Repairs standard transmissions
30.04 Installs standard transmissions
30.05 Rebuilds standard transmission components
31. Works on automatic transmissions
31.01 Troubleshoots automatic transmissions
31.02 Removes automatic transmissions
31.03 Repairs automatic transmissions
31.04 Installs automatic transmissions
31.05 Rebuilds automatic transmission components
32. Works on drive lines
32.01 Troubleshoots drive lines
32.02 Removes drive lines
32.03 Repairs drive lines
32.04 Installs drive lines
33. Works on differentials and transfer cases
33.01 Troubleshoots differentials and transfer cases
33.02 Removes differentials and transfer cases
33.03 Repairs differentials and transfer cases
33.04 Installs differentials and transfer cases
33.05 Rebuilds differential and transfer case components
H
AccessoriesError! Bookmark not defined.
34. Works on accessories
34.01 Troubleshoots accessories
34.02 Removes accessories
34.03 Repairs accessories
34.04 Installs accessories
34.05 Rebuilds accessory components
35. Works on hydraulic systems
35.01 Troubleshoots hydraulic systems
35.02 Disassembles hydraulic systems
35.03 Repairs hydraulic systems
35.04 Installs hydraulic systems

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